FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1146. (Vol. XXII. No. 50.) DECEMBER 12, 1930 **[Weekly, Price 6d. Post free, 7½d. Abroad, 8d.**

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: Editorial, Holborn 1884. Advertising, Holborn 3211.
Telegrams: Truditur, Westcent. London.

Annual Subscription Rates, Post Free.

United Kingdom .. 33s. 0d. United States .. $8·75
Other Countries .. 35s. 0d.*

**Foreign subscriptions must be remitted in British currency.* (*See last Editorial Page*).

CONTENTS

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1930
Dec. 12 .. Hampshire Ae.C. Dinner and Dance at South Western Hotel, Southampton.
Nov. 28-Dec. 14 Paris Aero Show.
Dec. 17 .. "Soaring Bird Flight," Lecture by Sir G. Walker, before London Gliding Club.
Dec. 25-26 .. Association Football: R.A.F. Channel Islands Tour, Jersey.
1931
Jan. 2 .. "Evaporative Cooling of Aero Engines," Lecture, by J. E. Ellor, before R.Ae.S., Hull.
Jan. 7 .. "Early Aviation," Lecture by E. C. Gordon England, before London Gliding Club.
Jan. 8 .. "Aircraft Production Methods in America," Lecture, by R. A. Bruce, before Westland Aircraft Soc.
Jan. 14 .. "Armoured Cars in Desert Warfare," R.U.S.I. Lecture, by Sqdn.-Ldr. G. E. Godsave. 3 p.m.
Jan. 17 .. Association Football: R.A.F. v. Corinthians, Wycombe.
Jan. 22 .. "Model Aeroplanes," Lecture, by W. Rigby, before Westland Aircraft Soc.
Jan. 28 .. "Glider Construction," Lecture, by C. H. Lowe-Wylde, before London Gliding Club.
Jan. 28 .. Association Football: R.A.F. v. Football Assoc. XI., Uxbridge.
Jan. 29 .. "Machining and Working of Stainless Steel," Lecture, by R. Waddell, before Westland Aircraft Soc.
Jan. 30 .. "Gliding and Soaring," Lecture, by Col. the Master of Sempill, before R.Ae.S., Hull.

"FLIGHT" BRITISH AIRCRAFT INDUSTRY NUMBER

The demand for the above issue was so great, that in spite of a largely increased printing number, it was out of print within three days. From the Paris Aero Show and other centres "sold out" was reported as fast as the supplies could be delivered, until the entire issue was exhausted. In offering apologies to those who were unable to procure copies, we would remind our supporters of our advance notice advising the placing of definite orders to ensure obtaining a copy. Reprinting was not possible owing to the enormous cost of production of a Journal of 124 Editorial pages plus advert—announcements.—The Publishers.

EDITORIAL COMMENT

OUR contemporary, *The Planesman*, in its November issue, publishes some interesting notes from its correspondent with No. 2 (Indian) Wing at Risalpur, North-West Frontier Province. He gives some account of the Chitral Relief, a military operation which takes place every two years, when the garrison of Chitral, consisting of a battalion of Indian infantry, is relieved. The relief took place in September. The operation takes about a month.

Mountain Aircraft

Chitral is the most northerly military post on the Frontier, situated near the junction of the Himalayas and the Hindu Kush range. The transport is carried on pack mules, and the column sometimes spreads out for 10 miles along the narrow mountain trails, passing through some of the finest mountain scenery in the world. The writer was filled with admiration for the marching powers of the Indian infantry, who, despite the steepness of the hills and the rarified air, would cover anything up to 20 miles a day. The march is rendered all the more arduous by the necessity for picketing heights on the flank of the route, in order to guard against surprise attacks by tribesmen. The pickets have to go on ahead and get up to their positions on top of the heights before the column passes by; and after it has passed they have to come down at the double and catch up with the rear guard. The

speed and skill with which the specially trained Indian regiments, Frontier Force, Gurkhas, and the like, can get pickets out and in, has to be seen to be believed. But the work is arduous in the extreme.

Of late years the need for picketing all along the route of a marching column has been reduced by the presence of aircraft. This year the two squadrons of the Wing, Nos. 11 and 39 Bomber Squadrons, both flying Wapitis with Jupiter engines, were busily engaged in helping the relief column to go up, and the relieved column to come down, in safety. Not only did the aeroplanes reconnoitre the hills, but they kept up constant touch with the column, and dropped supplies, mails, etc., doubtless to the great satisfaction of the sepoys and their British officers. No ambushes by tribesmen were recorded during this year's relief.

The sad part of the story is that one aeroplane crashed near the Lowarai Pass while engaged on Chitral Relief work and both the sergeant pilot and the observer were killed. We do not know the details of the accident, but we do know that if anything goes wrong with a machine or an engine while over those frontier hills, there is practically no chance of avoiding a crash on landing. In the broader valleys the ground may have a generally level appearance, but on closer examination it will be found to be rough and boulder-strewn in the extreme. The mountains themselves are but the bare bones of the earth. In the Himalayan foothills there are forests of deodar and other pine trees, on which an aeroplane might pancake without fatal results, and the open tracts are sometimes grassy—which would not help much in the case of a crash, but which certainly makes the hills look softer and more kindly. The Frontier hills are just bare, jagged rock, and though landings have occasionally been brought off among them without damage, such cases have been very rare.

It is a matter for surprise that the Air Ministry has never taken in hand the design of a type of aeroplane specially adapted for mountain warfare. It is possible that the most useful type of aircraft for the Frontier would be a semi-rigid airship of a type similar to those which the Italians used with success over the Alps in the great war. The craft which we have in mind would need enough speed to make its way against some pretty strong winds, and it would need to be indifferent to a number of bullet holes through its envelope. If such qualities could be provided, there would be much to recommend an airship, and particularly its power of reducing speed to almost nil in order to sweep a hillside with binoculars and to take deliberate aim with machine guns. It is at the least a possibility worth investigating.

What is more immediately possible, and it seems to us very desirable, is the development of a mountain aeroplane which would not be liable to forced landings. We have the utmost admiration for the machines and for the reliable qualities of the engines at present in use, and we have nothing to say against the former, except that they are single-engined. The General Purpose aeroplane on the Frontier ought, in our opinion, to have two engines. It might be a military development, say, of the Gloster Survey machine. Perhaps it would not be necessary to insist that the mountain aeroplane should be able to do its full work with one engine completely out of action and one propeller dead. That is an ideal for civil multi-engined machines. But we do hold that the mountain aeroplane ought to be able to get back to the safety of the plains with one engine giving very reduced revolutions. It need not be carrying full military load when in this predicament, for the bombs would naturally be jettisoned so as to reduce the weight. But a forced landing with such a machine ought to be so rare an occurrence that the risk could be taken as negligible.

Of course, such a machine would be more expensive than an ordinary single-engined machine. It is, however, understood that cost never weighs with the Air Ministry when selecting a type of machine as a standard for the Royal Air Force. It ought not to be allowed to weigh against the chances of saving or losing lives. Incidentally, the life of a trained pilot is not a very cheap commodity, and the total loss of a machine through a forced landing among the mountains is not the most satisfactory way of getting rid of the tax-payer's money. It is a cardinal rule for service types of aircraft that performance is all that matters. We may, and do, economise on the number of squadrons which we maintain, but we take a pride in thinking that those squadrons are better equipped than are any other flying units in the world. This is a year of re-equipment. The Air Estimates were framed on the principle that the money was to go on new machines rather than on new units. We rejoice that before long the Fleet Air Arm and Air Defences of Great Britain will have a number of squadrons and flights equipped with the very latest and very best in the way of day-bombers, interceptor fighters, and ship 'planes. That train of thought reminds us that we also feel satisfaction in the thought that our old Ally, Belgium, is acquiring an outfit of fighters which should make its air corps as strong as twice its own numbers of any possible enemy. Now we plead the case of the R.A.F. squadrons in India. They live nearer to active service than do any squadrons in Great Britain, for the Frontier is always either fighting, or on the verge of fighting. The risks which our airmen run from enemy action are not, perhaps, very great. But the risks of being taken prisoner are not too pleasant to contemplate. The risks of flying on such peaceful work as co-operation with the Chitral Relief are far greater than the risks of any peace flying in this country. We put it to the authorities of the Air Ministry that those squadrons ought to be equipped with machines which will obviate the risks of flying in peace, and of being taken prisoner in time of war.

◈ ◈ ◈ ◈

New President of F.A.I.

THE Fédération Aéronautique Internationale have elected Prince George Bibesco as its president, in succession to the late Comte de la Vaulx. The following have been elected members of the committee :—Herr Gerd von Hoeppner (Germany), Colonel Messner (Switzerland), the Comte d'Oultremont (Belgium), Mr. Godfrey Gabot (U.S.A.), General K. A. B. Amundson (Sweden), Colonel O'Gorman (Great Britain), Señor Ruiz Ferry (Spain), General Piccio (Italy), and Mynheer van den Bergh van Heemsted (Holland). M. Louis Bleriot (France) was proposed as the tenth member, but as his name was not put forward in time, the rules forbade his election on this occasion, and it has therefore been deferred.

The PARIS AERO SHOW

(*Continued from p.* 1412)

THE FRENCH AIRCRAFT EXHIBITS

AS in previous years, the French section of the aircraft exhibits at the Paris Aero Show forms far and away the largest. In fact, until one begins to look closely into the exhibits, under and in the galleries, one is left with the impression that the show is solely a French one. Actually, non-French nations are fairly well represented, but the allocation of stands is such that any aircraft firm not French has been pushed out of the way as much as possible. In fact, those responsible for the planning and allocation appear to have, with slight modifications, put themselves in the place of the lady of good family but in reduced circumstances who, when she had been reduced to selling flowers in Piccadilly Circus, announced her wares in a barely audible whisper, and every now and then mumbled to herself, "Oh, dear, I do hope nobody hears me." One walks around the Grand Palais with a feeling that the Chambre Syndicale, collectively and individually, is secretly hoping that nobody will discover the foreign aircraft exhibits. The exceptions are the Fokker and Dornier stands, which are well placed in the main part of the building. Yet another foreign exhibit was to have been found in this end of the Grand Palais, the Ford three-engined monoplane. That the dimensions with the Ford system of making the centre-section of the wing integral with the fuselage, prevented the machine from passing the doors of the Grand Palais is not, of course, to be blamed on the exhibition authorities, and neither is one inclined to blame them over much for refusing the Ford Company permission to break down the doors and build them up again. But the flat refusals and vetoing of every subsequent proposal made by Mr. Higgs afterwards rather indicated a desire to keep Fords out of the show if it should prove at all possible to do so, and the treatment meted out to the Ford company at Le Bourget could only be interpreted as a piece of chicanery dictated by fear of competition. In a way this is, of course, a compliment to the Ford machines, but not likely to improve the relationship between the aviation communities of the two nations. Less serious, and, in fact, rather ludicrous, was the feeble attempt made to disguise the fact that the "Puss Moth" is a British machine by placing a large plant in front of the "G" of the registration letters!

BERNARD

Three machines are exhibited by Société des Avions Bernard. One of these, the type 191 G.R., is the large yellow monoplane "Canari," on which Assolant, Lotti and Lefevre flew across the North Atlantic in 28 hrs. 50 min. in 1929. This machine is a cantilever monoplane, of wood construction, and fitted with 600-h.p. Hispano-Suiza engine.

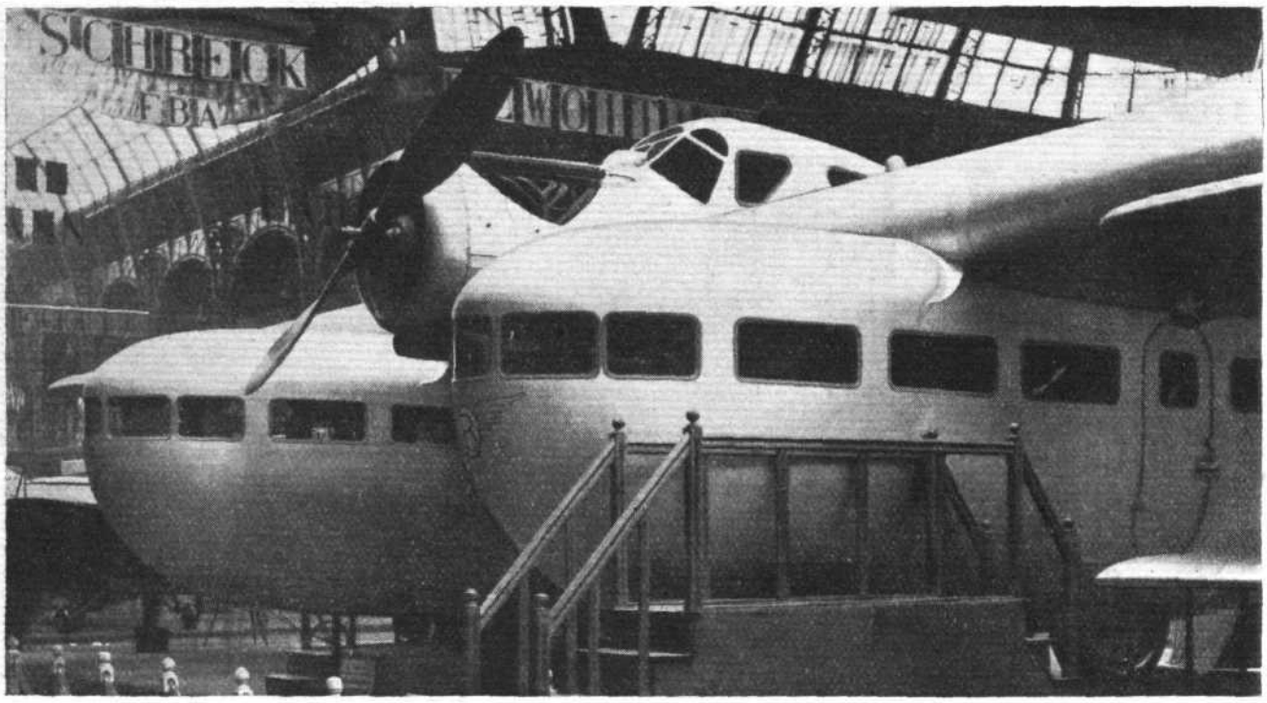
The second machine is a little high-speed twin-float seaplane, generally similar to our Schneider Trophy machines, and fitted with a 900-h.p. Hispano-Suiza engine. The monoplane wing is thickened considerably towards the wing roots, and it is presumably this fact which has led the designer to use streamline wires for bracing the wings downwards to the floats only. Of anti-lift wires there are none. This machine is known as the type H.V. 42, and a placard announces that its speed is 450 km./hr. (278 m.p.h.).

The Bernard type 73 S is styled an Avion de Grand Sport, and is a middle-wing monoplane (cantilever) single-seater, fitted with a 300-h.p. 7-cylinder Titan Major engine.

BLÉRIOT

A very imposing exhibit is that of Louis Blériot, and a sentimental note is lent to this stand by the presence there of the old type XI, with fan-type Anzani engine of 28 h.p., on which M. Blériot flew across the Channel in 1909. The old veteran of a machine makes one smile a little pityingly nowadays, and causes one to look back on Blériot's feat as rather heroic, but the type XI was regarded as quite

The Bernard H.V.42 is a high-speed seaplane of Schneider Trophy type. (FLIGHT *Photo.*)



The twin-fuselage Bleriot 125. (FLIGHT *Photo.*)

a thoroughbred in those days. The flat steel tape wing bracing is a reminder that Blériot was rather ahead of his time, and actually used then what must be regarded as the forerunner of the modern streamline wire.

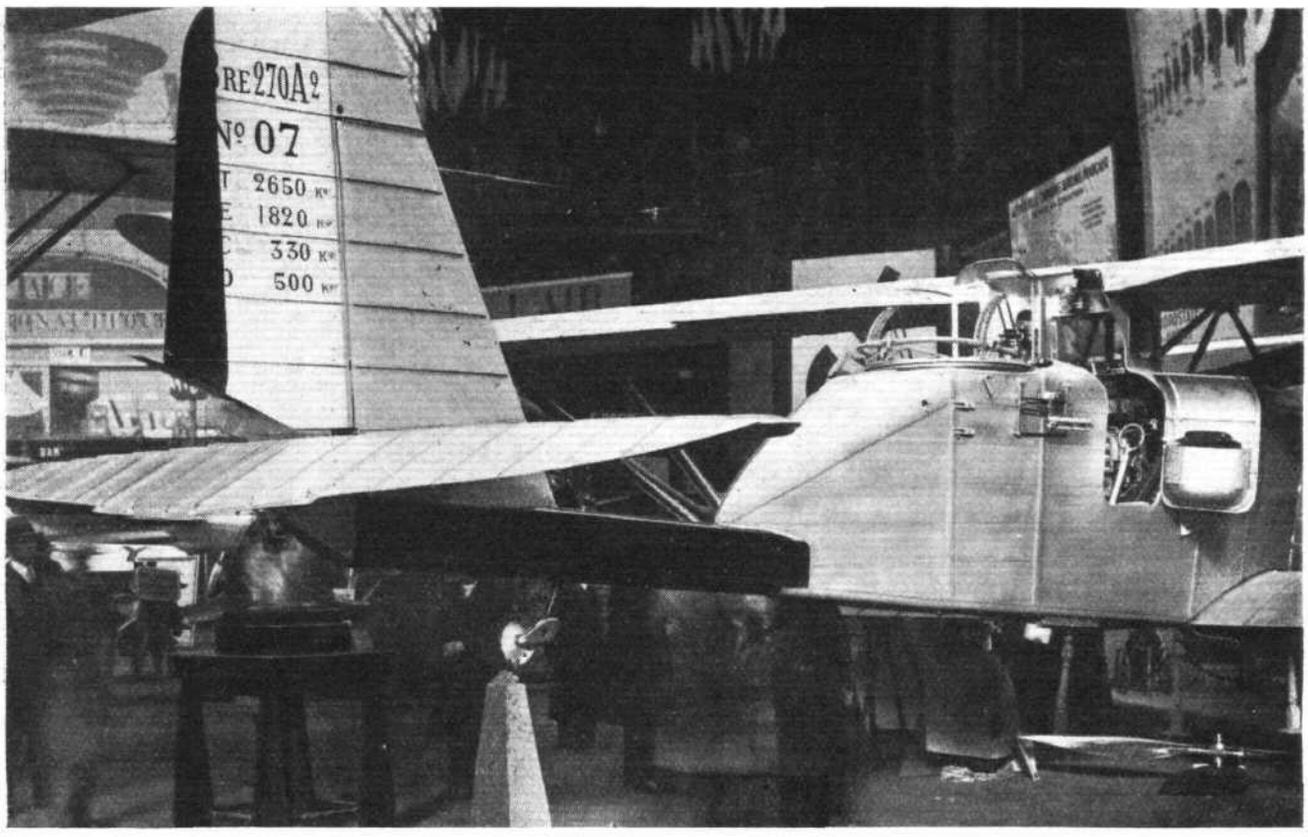
In some ways, one of the most interesting machines in the exhibition, because of its unusual design, is the Blériot 125. We are aware that very many visitors to the Grand Palais sneered quite openly at this machine, as, indeed, people are apt to do at anything new or anything which they do not understand, because they have not taken the trouble to understand it. Certainly a superficial inspection does not reveal the ideas which the designers had in mind when they conceived this machine. To appreciate the design (and to judge it without any attempt at appreciation would be unjust, apart from being idle) ; it is necessary to look deeper. One's first reaction when standing in front of the 125 is to do a rapid mental calculation : Two large fuselages and two engines in tandem, with a cabin for the pilot between them. The drag is likely to be great. And in any case, why two fuselages ? The easiest way is to take the line of least resistance and merely to dismiss the whole subject with a shrug of the shoulders and an expression of the opinion that the machine was made unusual solely to attract attention. We, personally, would credit M. Blériot's designers with more sincerity, and with a modicum of commonsense. After all, the machine must have cost quite a good deal to build, and as it was, presumably, paid for by the Blériot firm and not by the French Government, it is only reasonable to accept it as a serious attempt to achieve something. That much granted, the next step is to try to discover what it was the designers aimed at. This is not altogether an easy matter. They may have had all manner of things in mind. But some, at least, seem obvious to anyone who attempts to get a little below the surface of things.

It may, perhaps, be recollected that some years ago we published in THE AIRCRAFT ENGINEER (monthly technical Supplement to FLIGHT) an article giving details of wind-tunnel tests made by Göttingen on a model of a twin-fuselage monoplane designed by the American designer, Mr. James V. Martin. According to Göttingen, that machine had a maximum L/D of about 19. This is a figure not approached, let alone achieved, by any modern " normal " aircraft. The Martin design had its two engines in the noses of the fuselages, and the two undercarriages retracted into the fuselages. There was no obstruction in the centre of the wing. It may also, perhaps, be recollected that in his very interesting and instructive paper describing the Fairey long-distance monoplane, Mr. Fairey stated that the under-carriage drag accounted for some 15 per cent. of the total drag. In a machine like the Fairey long-distance monoplane such an item would represent a greatly increased range, and in a normal commercial machine it might come very near making all the difference between commercial and uncommercial aviation. To us it seems that the *raison d'être* of the Blériot 125 may be found by bearing in mind these two machines, the Martin twin-fuselage monoplane, and the harmful effects of an exposed undercarriage. The Fairey was very efficient, but would have been even more without its exposed undercarriage. What further confirms this hypothesis is the fact that Blériot is showing another commercial machine, a single-engined low-wing monoplane, which is fitted with a retractable undercarriage. Thus, one has definite evidence that the Blériot designers are alive to the importance of reducing drag. With a twin-fuselage arrangement the undercarriage can either be of fairly normal arrangement, and so placed that but little of the wheels project. This is actually what has been done in the 125, in which the two pairs of tandem wheels are nearly buried inside the fuselage. Or the undercarriage can be designed to project by the usual amount, but capable of being drawn into the fuselage, as was done in the Martin monoplane design. To design a retractable undercarriage for a machine of orthodox lay-out is not easy except by adding a good deal of weight. By having two fuselages it becomes a relatively simple matter.

The Blériot 125 is an all-wood, cantilever monoplane, with the two fuselages hung directly below the wing, and the two engines, placed in tandem, in the centre of the wing. It is open to argument that this placing of the engines is likely to have harmful effects on the air flow over the wing at a point where the flow is very sensitive to excrescences of any sort. We are in ignorance concerning the actual flow in this machine, and interference effects are so uncertain that it is dangerous to generalise. In the 125 they may have been small or they may have been large. We believe that wind-tunnel tests on a model have been made, but do not know whether or not they were made with the airscrews running. In the absence of data it is impossible to judge whether the drag of the two smaller fuselages and the central engine placing is likely to be greater or smaller than would have been the drag of a single large fuselage with the two engines placed outboard. But that is what the Blériot designers have set out to determine, and one can only await results of actual flying trials.

As a practical machine one may find points to criticise in the 125. The clearance between the bottoms of the fuselages and the ground seems very small, and on rough ground the fuselages might be liable to suffer damage. Tail wheels projecting farther out of the stern would help matters in this respect. The view out of the cockpit or pilots' cab does not appear to be too good ; and the radiator arrangement, in which the single nose radiator serves to cool both engines, might be improved.

The main data relative to the Blériot 125 are as follows : length, 13·8 m. (45 ft. 3 in.) ; wing span, 29·4 m. (96 ft. 5 in.) ; wing area, 100 sq. m. (1,076 sq. ft.) ; nominal power,



The Breguet 270 A.2 has a tail boom in the form of a large box-section steel spar to give a better field of fire for the gunner. (FLIGHT *Photo.*)

1,000 h.p.; tare weight, 3,930 kg. (8,640 lb.); gross weight, 6,300 kg. (13,860 lb.). The *estimated* maximum speed is 205 km./hr. (127 m.p.h.) The two cabins have seating accommodation for 12 passengers (six in each), and the view is good, while the fact that the engines are above and behind the cabins should help to decrease the noise a good deal.

Another Blériot commercial machine is shown, the type 111. This is a strut-braced low-wing monoplane of the "feeder-line" type, and is fitted with a 400-h.p. Hispano-Suiza engine. The type 111 is of the conduite interieure type, the pilot being placed in the forward part of the cabin, which has seating for 4 passengers. The undercarriage is so arranged that the wheels can be swung outwards and upwards into the underside of the wings. The Type 111 is of mixed construction in that the fuselage is mainly built of wood, the cabin being a plywood box, while the rear portion is composed of longerons and struts braced by wires and fabric covered. The semi-cantilever monoplane wing has spars of duralumin box section, while the ribs are of wood, and the covering is fabric.

The retractable undercarriage comprises two wheels, each mounted in a duralumin fork. The wheels themselves are of the Blériot "elastic" type, and swing outwards and upwards when "retracted."

Main data of the Blériot 111 are: Length, 10 m. 64 cm. (34 ft. 11 in.); wing span, 17 m. (55 ft. 9 in.); weight, empty, 1,600 kg. (3,520 lb); gross weight, 2,700 kg. (5,940 lb.); maximum speed, 240 km./h. (149 m.p.h.); cruising speed, 200 km./h. (124 m.p.h.); range, 800 km. (496 miles); landing speed, 70 km./h. (44 m.p.h.).

A Spad 91 light single-seater fighter is of orthodox Spad design, with the familiar I struts between the wings. The engine is a 500-h.p. Hispano-Suiza.

Also exhibited on the Blériot stand, but not, we gather, designed, but only built by this firm, is a Guillemin *Avion Sanitaire*, the J.G. 40. It is a small all-metal machine with 120-h.p. Salmson engine, designed to carry one injured or wounded man in addition to the pilot.

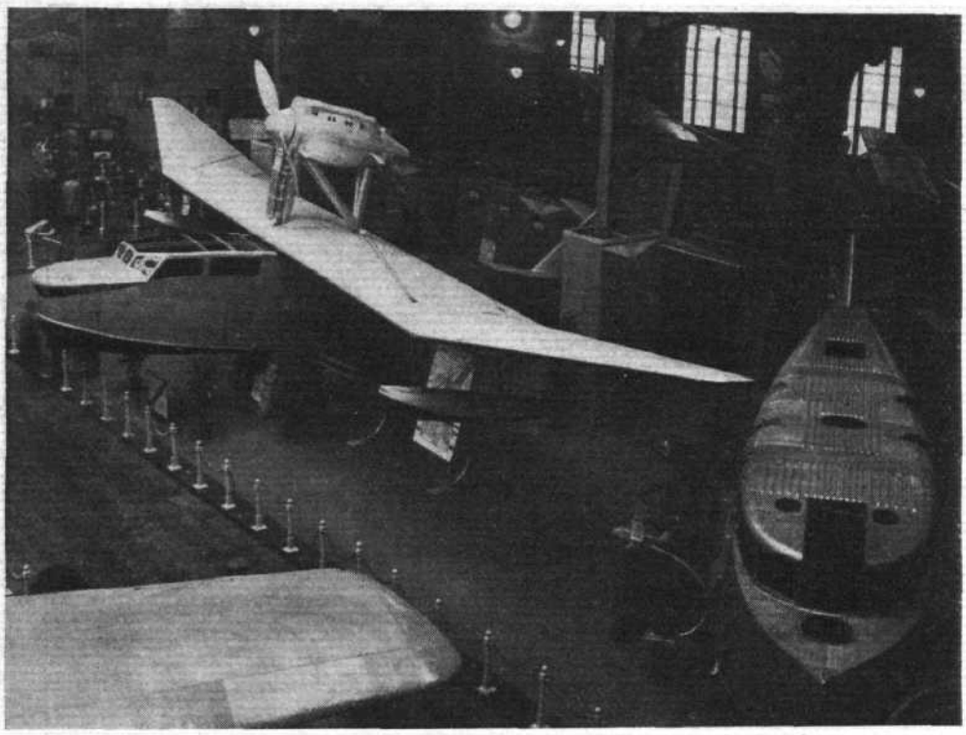
BREGUET

Louis Bréguet exhibits two complete machines and the skeleton fuselage of a third. One of the machines is the "Question Mark," on which Costes has made so many fine flights. This machine has already been described in some detail in FLIGHT. The other is the Breguet 270 A2, a military machine of unorthodox design, in which the fuselage is cut off short just aft of the gunner's cockpit, the tail being carried on a single boom in the form of a large box-section steel spar. The object is, presumably, to give the gunner a clearer field of fire downward and aft.

Although the Breguet 270 A2 is of somewhat unusual aerodynamic design, it is the structural side of this machine which is of the greatest interest. The whole structure is conceived and carried out in a novel manner, and there were many visitors to the show who regarded the 270 as marking the greatest step forward of all the machines exhibited. To those who have followed closely the history of flying from the earliest days, there is, perhaps, significance in the fact that in the 270 Breguet the designers may be said to have reverted to type. In the early days of flying, the Breguet machines were remarkable for several design features not found in other aircraft of the time. For example, quite early M. Breguet adopted metal as his structural material for many of his components. Moreover, several early Breguet types had single-tube fuselages and single-spar wings. The single steel tube formed the "backbone" of the fuselage, the external form of the fuselage being but a streamline fairing. Also, the wings had single steel tube spars, around which the wing ribs were pivoted, their movement being limited by springs. It is rather interesting to recall this early type of Breguet in contemplating the latest type produced by the famous French constructor, and it requires no great stretch of the imagination to see in the 270 A 2 the modern interpretation of the Breguet principles of 1912 or so.

Fundamentally, the Breguet 270 A 2 is based, structurally, upon two stout members forming, roughly speaking, a letter "T." The top of the T is the single spar of the lower wing, and the vertical arm of the T is the single box-section spar of the fuselage, which carries the tail. These two box-section spars are joined together by a very simple joint, and to them are ultimately transmitted all the heavy loads. The forward part of the fuselage, the engine mounting, etc., are attached at or near the junction of the two parts of the "T." At the rear end of the fore and aft beam is attached the tail. At the outer ends of the transverse beam are attached the V-type interplane struts. And about halfway between the fuselage and the interplane struts are attached the wheels of the undercarriage. The two box-spars which form the "T" are of sheet steel, with walls and flanges corrugated or having the equivalent of corrugations in the form of trough sections riveted on. The internal diaphragms of these spars are particularly neat. They are by no means simple, as regards their geometrical form, but as a mass-production proposition, with the necessary dies available, they are probably very cheap to manufacture.

The top plane of the 270 is more or less of orthodox



The C.A.M.S. flying boats. Note the dihedral wing tips of the C.A.M.S. 80. The wing is wire braced. (FLIGHT *Photo.*)

Breguet construction, but the wing system as a whole is, of course, influenced by the fact that the single lower wing spar takes all lift and anti-lift loads, via the V-type interplane struts.

The two wheels of the undercarriage are, as already mentioned, placed one on each side, in the middle of the lower wing spar. Each wheel is supported on a fork built up of sheet steel, and the fork terminates at the upper end in a large-diameter steel tube working in a tubular guide on the spar. Thus not only is the wing a cantilever, but each wheel is cantilever mounted. The arrangement is somewhat daring, especially when one remembers that the landing shocks are taken by the middle of the spar, and that on the spar alone depends the whole strength of the wing structure. Doubtless the factors of safety are very high for this particular member, and as the number of members has been reduced to a minimum one can, presumably, afford to make them exceptionally strong without thereby incurring a prohibitive amount of extra weight.

The equipment of the Breguet 270 A 2 is, in its way, as interesting as is the structure, but space prohibits a detailed reference. One point is worth mentioning as indicating how attention has been paid to the *use* of the machine as well as to its structural design. Both pilot's and gunner's cockpits are provided with side doors. Not only does this facilitate getting into and out of the machine, but the doors have hinges so designed that the doors can be dropped, overboard in an instant while the machine is flying, and in case of emergency this makes it much easier for the crew to escape by parachute.

The main dimensions of the Breguet 270 A 2 are: Length, 9 m. 76 cm. (32 ft. 0 in.); wing span (upper), 17 m. 012 cm. (55 ft. 10 in.); wing span (lower), 7 m. 580 (24 ft. 10 in.); wing area, 49·67 m.² (534 sq. ft.); tare weight (with 500 h.p. Hispano), 1,756 kg. (3,860 lb.); gross weight (according to use of machine), 2,550 kg. (5,615 lb.), or 2,900 kg. (6,375 lb.); maximum speed near ground (with 500 h.p. Hispano), 238 km./h. (148 m.p.h.); climb to 3,000 m. (10,000 ft.) in 10 minutes; ceiling, 7,900 m. (25,900 ft.).

The skeleton fuselage exhibited is that of a Breguet type 23-o bomber and long-distance reconnaissance machine three seater.

C.A.M.S.

The Chantiers Aero-Maritimes de la Seine exhibit one complete machine, and the boat hull of another. Hitherto, this firm has adhered to the production of wood-planked hulls but this year both machines have metal hulls, planked with duralumin.

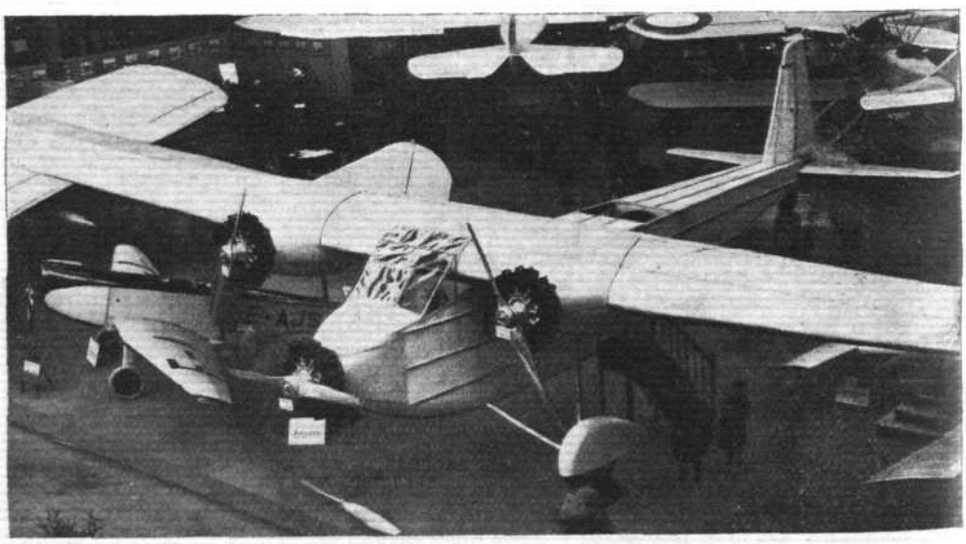
The C.A.M.S. 80 is a very unique looking machine. It is a monoplane flying boat, with a 700 h.p. Lorraine "Orion" engine mounted above the wing and driving a tractor airscrew. The monoplane wing appears to be in one piece, and for the greater part of its span is perfectly straight, *i.e.*, with no dihedral. The wing tips, however, are set at a pronounced dihedral, not unlike the system used in the Navarro "Chief." In the case of the C.A.M.S. 80, however, the reason for this arrangement is obviously that of getting the wing tips clear of the water. The outboard wing floats, which appear to be of very small displacement, are placed at the points where the dihedral wing tips join the straight portion of the wing, and the large span wing is braced by eight streamline wires only, four below and four above. The type 80 is intended for reconnaissance and bombing, and its future history should be interesting.

Of the C.A.M.S. 58 only the hull is shown. This is of all-metal construction, with smooth planking in duralumin. The machine is stated to have been flown, while the type 80 has not yet been in the air. The 58 is a 4-engined commercial flying boat carrying 12 passengers. It is fitted with four 300-h.p. Lorraine "Algol" engines. It is a biplane, and the engines are arranged in two tandem pairs under the top plane.

CAUDRON

Rene Caudron is showing three machines—a large three-engined commercial monoplane and two light plane two-seaters. The commercial machine is of all-metal construction, and is a cantilever monoplane fitted with three 300-h.p. Lorraine air-cooled engines. Both the fuselage and the cantilever wing are metal-covered, with smooth duralumin plates. We hope to give fuller details of this machine at a later date.

The C.232 is the little light two-seater biplane with 95 h.p.



The Caudron three-engined commercial monoplane is fitted with three Lorraine radial air-cooled engines. Under its wings may be seen the Caudron low-wing monoplane, type C.195. (FLIGHT *Photo.*)

Renault engine described and illustrated in FLIGHT a short time ago, while the third machine, the C.195, is also a light 'plane, but a low-wing cantilever monoplane of all-wood construction. This also has the 95-h.p. Renault engine.

COUZINET

Regarded by many visitors to the Paris Aero Show as a "freak," but at least showing some originality of thought and a determination to attempt to improve aerodynamic efficiency, the Couzinet type 20 is a little three-engined light monoplane with 40 h.p. Salmson engines. The undercarriage is so designed that the wheels can be raised into the outboard engine housings and partly buried there. To us it appears doubtful whether the projecting half of the wheels, plus the fact that the axles, radius rods, and telescopic legs lie some 2 in. away from the lower surface of the wing, will not give as much drag as if the undercarriage had been left hanging down. But it should be possible to design undercarriages of a different type, in which all, or practically all, could be entirely buried, and in that case the machine should have a very high maximum L/D.

The three Salmson engines are mounted in *very* pointed housings which are continued past the propellers in the form of spinners. The machine is a low-wing monoplane of all-wood construction, and is designed to carry pilot and four passengers at a cruising speed of 150 km./h. (93 m.p.h.). In view of the fact that five persons are carried for a power expenditure of 120 h.p., or 24 h.p. per occupant, this seems to be extremely good. The cruising range is stated to be six hours, or 900 km. (560 miles).

The Dewoitine D.30 is a single-engined 10-seater passenger aeroplane. (FLIGHT *Photo.*)

DEWOITINE

Of the four machines exhibited by Dewoitine, two are of the familiar D.27 type, one a single-seater fighter, and the other a training machine. The former has a 500 h.p. Hispano-Suiza engine, while the school machine has a Gnome-Rhone Titan radial air-cooled of 300 h.p.

The other two machines are commercial types. The D.30 is a large commercial cantilever monoplane, single-engined (650 Hispano-Suiza), and of all-metal construction. The fuselage is metal-covered, and the wing is metal-covered from leading edge to mid-chord. A ridiculously small Lamblin radiator under the belly of the fuselage looks wholly inadequate for dealing with a 600-h.p. engine. The D.30 is designed to carry 10 passengers.

The main data relating to the Dewoitine D.30 are: length, 14 m. (45 ft. 11 in.); wing span, 25·18 m. (82 ft. 6 in.); wing area, 65 sq. m. (700 sq. ft.); tare weight, 2,476 kg. (5,425 lb.); gross weight, 4,486 kg. (9,875 lb.); maximum speed, 215 km./h. (133 m.p.h.); range, 860 km. (535 miles).

A smaller commercial or "feeder line" machine is the Dewoitine D.35. Fitted with a 300 h.p. Hispano-Wright engine, this machine is a strut-braced monoplane of all-metal construction. The fuselage is metal-plated, but the wing is fabric-covered. This machine carries pilot and four passengers.

FARMAN

This year the Farman Brothers exhibit civil aircraft only, of which four are shown. One of these is the little F.190 which was at the last Paris show, and one of which recently flew from France to Indo-China in record time.

The F.200 is a recent introduction. It is a light-'plane two-seater parasol monoplane, strut-braced, fitted with the beautiful little six-cylinder Hispano 100 h.p. water-cooled engine shown at Olympia last year. A split undercarriage is fitted, and wheel brakes are provided. A Lamblin radiator is placed under the belly of the fuselage.

The Farman F.231 is a low-wing cantilever-monoplane, light two-seater with 95-h.p. Renault engine.

Of a different class is the Farman F.301, a commercial eight-passenger machine fitted with three Salmson engines of 230 h.p. each. It is a strut-braced, high-wing monoplane, and certainly looks a great improvement compared with the "Jabiru."

HANRIOT

Some change appears to have taken place in the Hanriot firm, which this year is styled Lorraine-Hanriot. Three machines are exhibited. The 21 S is an Avion Sanitaire with 120 h.p. Lorraine engine. It has a metal fuselage and plywood-covered wing (semi-cantilever).

The Hanriot H.431 is described as an "Avion biplace de Travail et de Liaison," and is a sort of general purpose machine carrying camera, wireless, and night-flying equipment. It is an unequal-span biplane of mixed construction The engine is a 240 h.p. Lorraine "Mizor."

The Hanriot H. 10 ED 2 is a strut-braced parasol monoplane two-seater school machine with 100 h.p. Lorraine engine. The machine is intended for preliminary school work.

LATÉCOÈRE

Of the two machines exhibited by Latécoère, one is a three-engined commercial machine, and the other a single-engined seaplane. The commercial monoplane is known as the Lat. 350, and intended for passenger and air mail work. It is a strut-braced sesquiplane in that short low wing stumps run from the fuselage to the bottom of the outboard engine nacelles. The fuselage is metal plated, while the wing is fabric covered. The engines are 400 h.p. Hispano-Suiza water cooled, one mounted in the nose and two outboard on top of the short lower plane. We gather that this machine has not yet flown.

The Lat. 28 is something of a world's record holder, no less than 11 records standing to its credit, mostly in the distance and duration, with 1,000 and 2,000-kg. useful-load class. With a petrol capacity of 2,400 litres (530 gallons),

the machine has a very long range. It is believed that the Lat. 28 is intended ultimately for the France-S. America air service. The fuselage and floats are metal plated, while the strut-braced monoplane wing is fabric covered. The actual machine exhibited has been named *Comte de la Vaulx*. The engine is a 600-h.p. Hispano-Suiza.

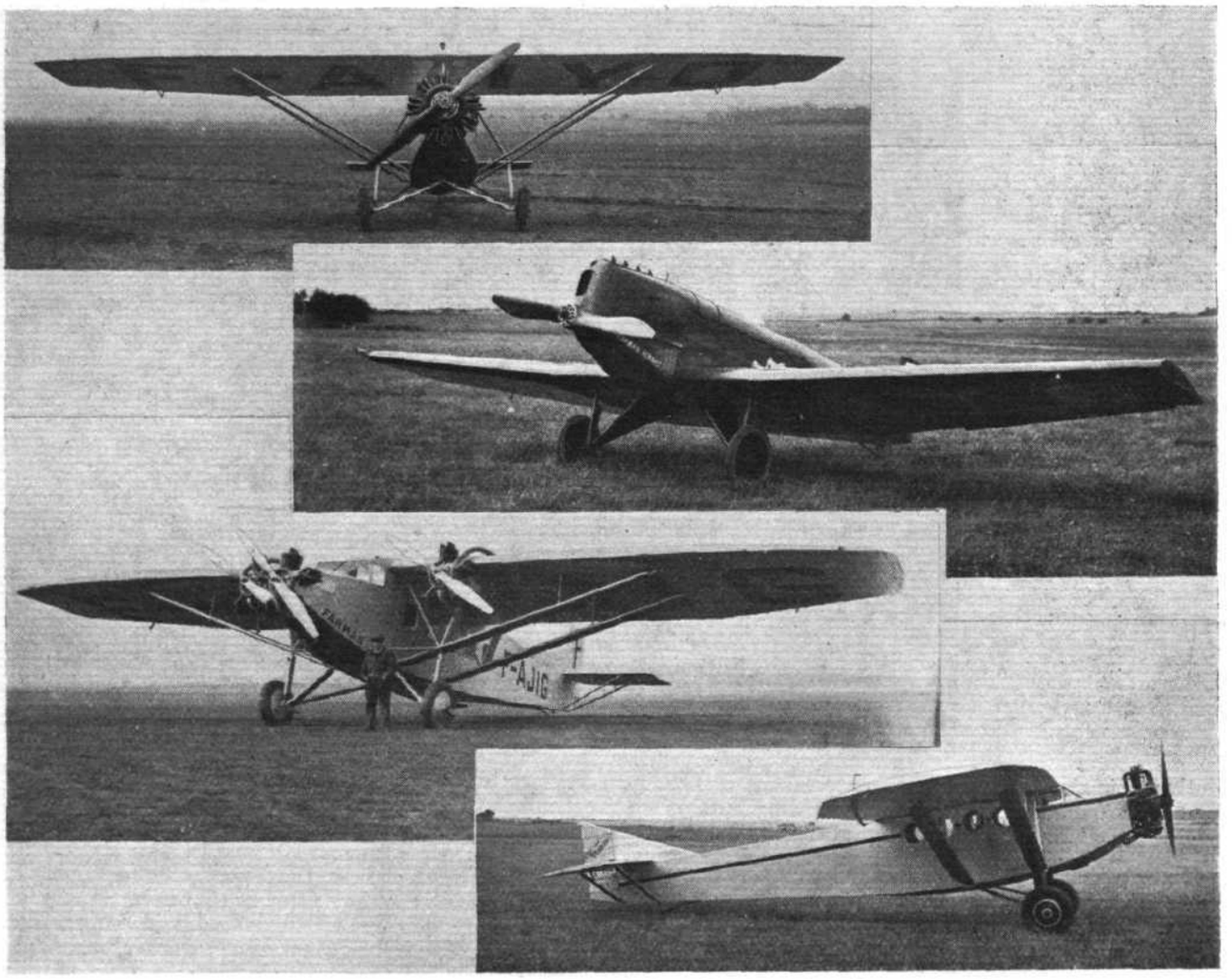
LEVASSEUR

This year Pierre Levasseur exhibits two machines, a military type and a little two-seater flying boat.

transatlantic service. It can be equipped either as a mail-carrier or as a passenger machine.

The LeO 203 is a 4-engined bomber, similar in general design to the LeO night bombers, with which FLIGHT readers will be familiar, but fitted with 4 engines in two tandem pairs. The engines are Gnome-Rhone "Titan Majors" of 300 h.p.

Another machine exhibited on this stand is a cantilever monoplane flying boat, the LeO H.22. This can be equipped either for touring (pilot and 3 passengers), or for air mail



FOUR FARMANS EXHIBITED: The machines shown in above photographs differ slightly, mainly in the engines fitted, from those actually shown at Paris. The machine in the upper left-hand corner is the F.200, a light monoplane. That on the right is the F.231 low-wing light monoplane, while of the lower photos, that on the left shows the type F.301 three-engined commercial machine, and that on the right the F.190 which flew to Indo-China in record time.

The P.L.11 is a twin-float seaplane of mixed construction, and is a ship plane so designed that it can be used for catapult launching. The machine is a three-seater, with cockpits for pilot, navigator and gunner. The engine is a 420-h.p. Gnome-Rhone "Jupiter."

The P.L.12 is a neat little sesquiplane flying boat with two seats placed side by side. The lower wing is short, and carries the outboard wing-floats. The engine, a 230-h.p. 9 AB Salmson radial air-cooled, is mounted on the leading edge of the wing, and drives a tractor airscrew. The machine is rather a neat little job, and should appeal to those who are fond of yachting, but who also wish to "get into the air."

LIORÉ AND OLIVIER

This stand is dominated by the huge metal hull of a flying boat, the LeO H.27. Wing roots in place on the hull indicate that the machine will be a cantilever monoplane, but there is no indication as to where the engines will go. One assumes that, as the machine is stated to be a four-engined type, the power plants, which will be 4 Hispano-Suizas of 650 h.p., the engines will be placed in tandem pairs on top of the wing. The hull is metal plated, and the machine is believed to be intended, when finished, for the transport. It is a much smaller machine than the H.27 and has a metal planked hull and plywood-covered wing. The engine, a Gnome-Rhone "Titan," is mounted as a pusher on a three-legged mounting above the hull. The LeO H.22 is an amphibian, the land undercarriage being arranged in a manner not unlike that used on the Short "Mussel."

MORANE-SAULNIER

Reference has already been made to the De Havilland Puss Moth exhibited on the Morane-Saulnier stand. This firm also exhibits a Gipsy Moth, for which type the M.-S. firm hold the building rights. In addition to these two types, three original Morane-Saulnier designs are shown. The M.S. 224 is an all-metal strut-braced single-seater fighter, fitted with Gnome-Rhone "Jupiter VII" engine. The machine has a split undercarriage of enormously wide track, which seems to be a feature of all recent M.S. designs.

The M.S. 230 is an advanced training two-seater with 230-h.p. Salmson engine. It is of generally similar design, *i.e.*, a strut-braced parasol monoplane with very wide wheel track.

The third machine, the type M.S.301, is a two-seater school or touring machine, fitted with 100-h.p. Lorraine air-cooled. All three machines are similar in a general way,

The Latécoère 350 is a three-engined commercial monoplane. Note that short lower wings run from fuselage to outboard engine mountings. (FLIGHT *Photo.*)

and of the outline which has become typical of Morane-Saulnier.

MUREAUX

The title of this firm appears to have been changed since the last Paris Show into "Les Ateliers de Constructions du Nord de la France & des Mureaux," a nice short title which, in sheer self defence, has had to be condensed into the initial letters A.N.F. The machine shown this year is known as the type III R.2, and is a two-seater military machine, a strut-braced parasol monoplane, of all-metal construction, with fuselage as well as wing covered with flat metal plating.

NIEUPORT-ASTRA

Three Nieuport-Delage machines are exhibited, of which two are commercial machines and the third a single-seater fighter.

The Type 541 is a large, single-engined commercial monoplane (cantilever) of all-metal construction. The wing is metal planked, as is also the forward portion of the fuselage. The rear part of the fuselage is, however, covered with fabric. The cabin is equipped for 8 passengers, and the engine is a water-cooled Lorraine "Courliss".

A much smaller machine is the type 641, which bears the name "Icare III." This machine, of the "feeder line" type, is also a cantilever monoplane, but is of all-wood construction. The 300-h.p. Lorraine "Algol" engine is carried on a swivelling mounting, something like that used by Boulton and Paul and Bristols several years ago, but which seems since to have gone out of fashion in England. The cabin has seats for four passengers, and the cockpit is laid out for two pilots side by side, with dual controls.

The single-seater fighter, type 82 C.1, is of typical Nieuport-Delage appearance, and is almost a triplane, what with its large axle fairing, small lower wing and large upper wing. All-metal construction extends to the covering, which is attached in flat panels. The fuselage planking is a most beautiful job, with its perfect smoothness of surface and streamline form, but the long fore-and-aft strips with which the fuselage is planked must entail a great deal of panel-beating. The engine is a 500-h.p. Lorraine "Petrel" water-cooled, and the machine is credited with a speed of 260 km./h. (162 m.p.h.) at 10,000 ft.

POTEZ

Henry Potez has this year followed what appears to be approximately the standard procedure in exhibiting three machines, two civil and one military. This ratio holds good with quite a number of firms.

The Potez 39 A 2 is a military two-seater, of all-metal construction. It is a strut-braced parasol monoplane of large size. The wings are braced by V struts, and a split undercarriage, with wheel brakes, is fitted.

The Potez 36 is a light plane two-seater monoplane, with its strut bracing arranged something like the Westland Widgeon, but the two seats are placed side by side. The wings fold as in the Widgeon. There is a split undercarriage fitted with wheel brakes, and the wings are slotted along almost the entire length. But, curiously enough, the slots are fixed permanently open. One would have thought that the drag would be rather excessive. The engine is a four-cylinder in-line air-cooled Renault.

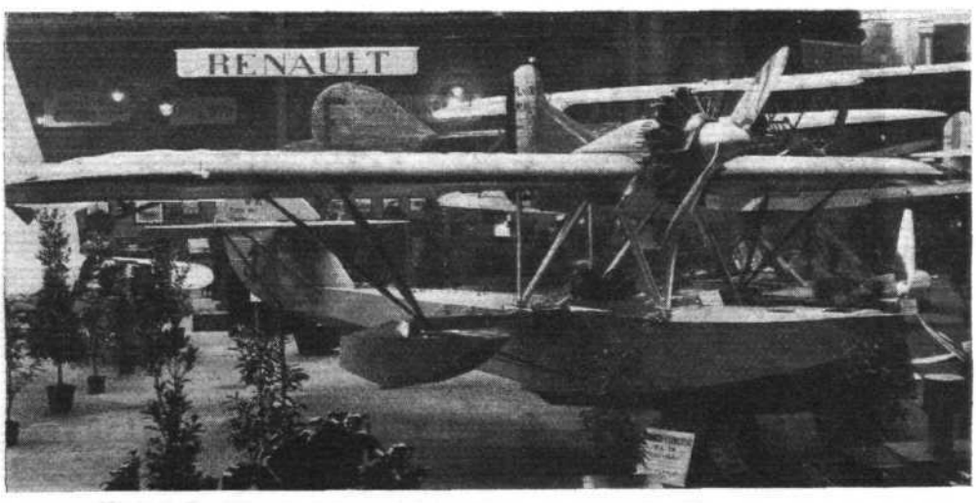
The Potez type 40 is a large three-engined commercial monoplane of all-metal construction. The monoplane wing is of the strut-braced semi-cantilever type, and both it and the fuselage are covered with duralumin, having fore-and-aft corrugations placed approximately 4 inches apart. Three Salmson engines are fitted. The cabin is large, but at the Show it is empty, so that it is difficult to say what the machine is intended for. It may be freight, mails, or passengers.

SCHRECK F.B.A.

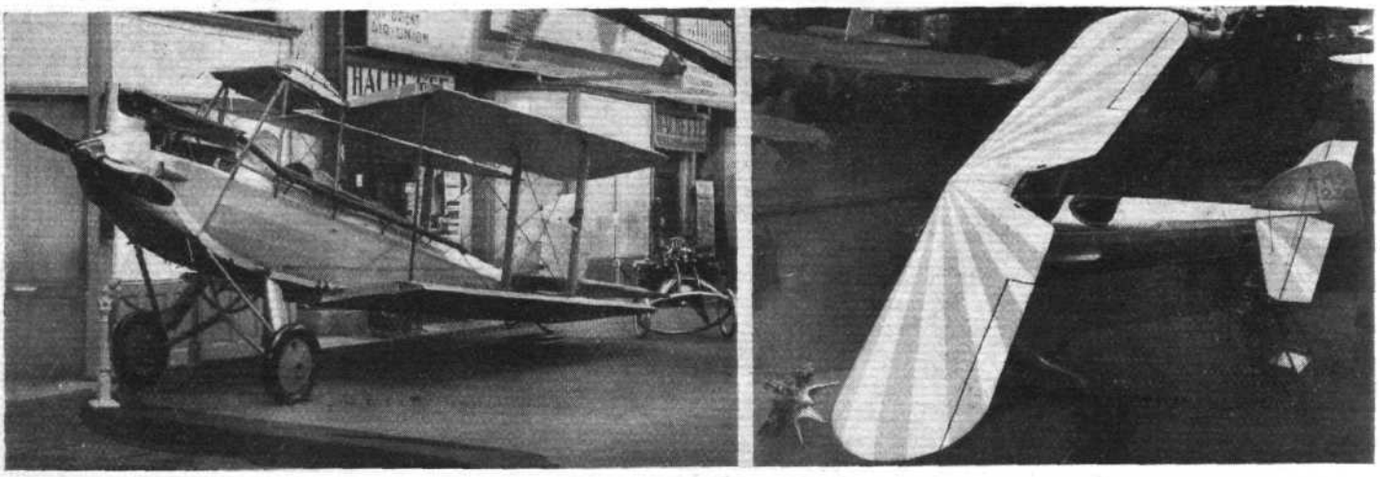
Both the machines shown by this firm (the letters, by the way, signify Franco-British Aviation) are civil types, both amphibian flying boats.

The type 290 HM 4 is a biplane with pilot and three passengers placed in the same cabin. The engine, a 300-h.p. Lorraine air-cooled radial, is placed centrally in the wing gap, and drives a pusher airscrew.

The smaller machine, type F.B.A. 310, is a strut-braced monoplane flying boat with 120-h.p. Lorraine engine, arranged as a pusher. The cabin seats pilot and two

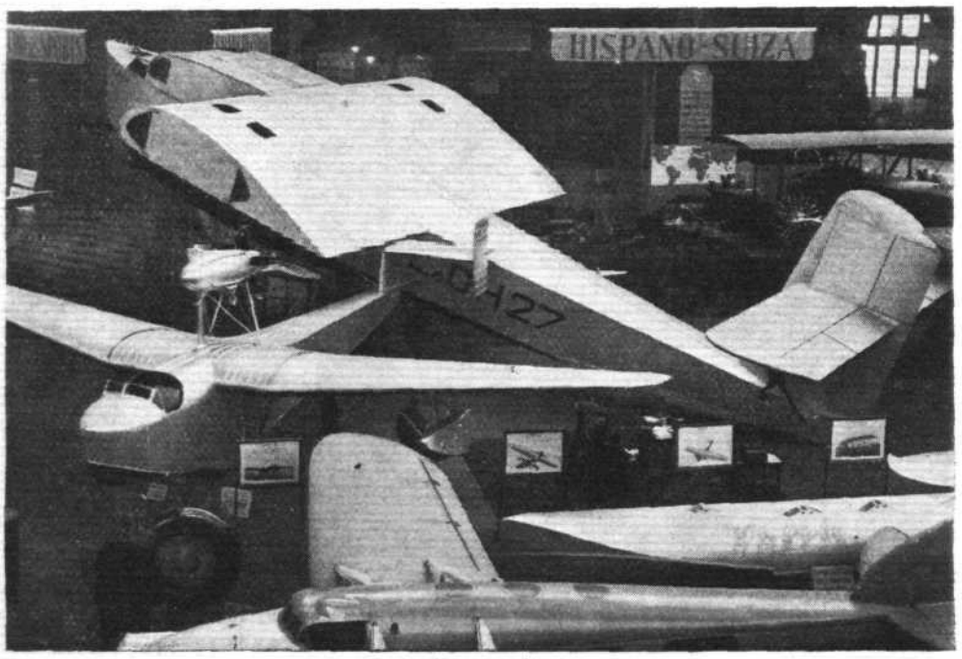


The Levasseur side-by-side two-seater flying boat has its wing tip floats supported on the ends of a small lower wing. (FLIGHT *Photo.*)



On the left a Morane-Saulnier built Gipsy-Moth. The Morane-Saulnier 230, on the right, is an advanced training machine. Behind it may be seen the Breguet "Question Mark." (FLIGHT *Photos.*)

passengers. If no difficulty is experienced with cooling the engine, this type of machine should attain a considerable degree of popularity, as the combination of forward cabin and pusher engine above and behind should make for absence of noise in the cabin. The wooden hull has a Vee bottom, certainly, but the Vee looks just a little flat to English eyes. However, this will probably help the get-off, and as the machine is not intended in any case to be a sea-going craft, the relatively flat bottom may be quite serviceable on smooth water.

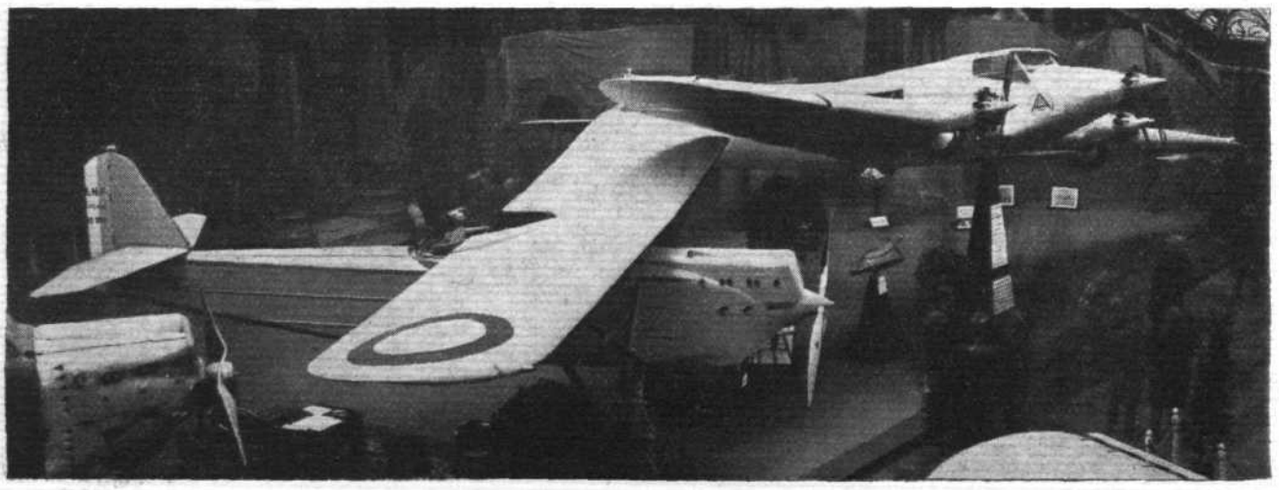


Of the Liorê and Olivier LeO H.27, the all-metal hull only is shown. In front of it is the small two-seater amphibian type LeO H.22. (FLIGHT *Photo.*)

S.E.C.M.

The S.E.C.M. firm now belongs to the S.G.A. Group (Société Générale Aéronautique), which also includes the firms of C.A.M.S., Lorraine, Lorraine-Hanriot, Nieuport-Delage, and Société Aerienne Bordelaise. It appears that in the S.E.C.M. Company, all landplanes are designated S.E.C.M. Amiot, and all seaplanes S.E.C.M. Latham.

The S.E.C.M. Amiot type 140 M. is described as a multi-seater fighter. It is a large cantilever monoplane of all-metal construction, with two Lorraine "Orion" 700-h.p. water-cooled engines, neatly faired into the wing. The fuselage has a downward projection for gunners and bombers, which, as it is provided with windows at both ends, permits not only a good view, but also enables the rear gunner to fire back under the tail. The radiators are mounted on the underside of the wing, quite a

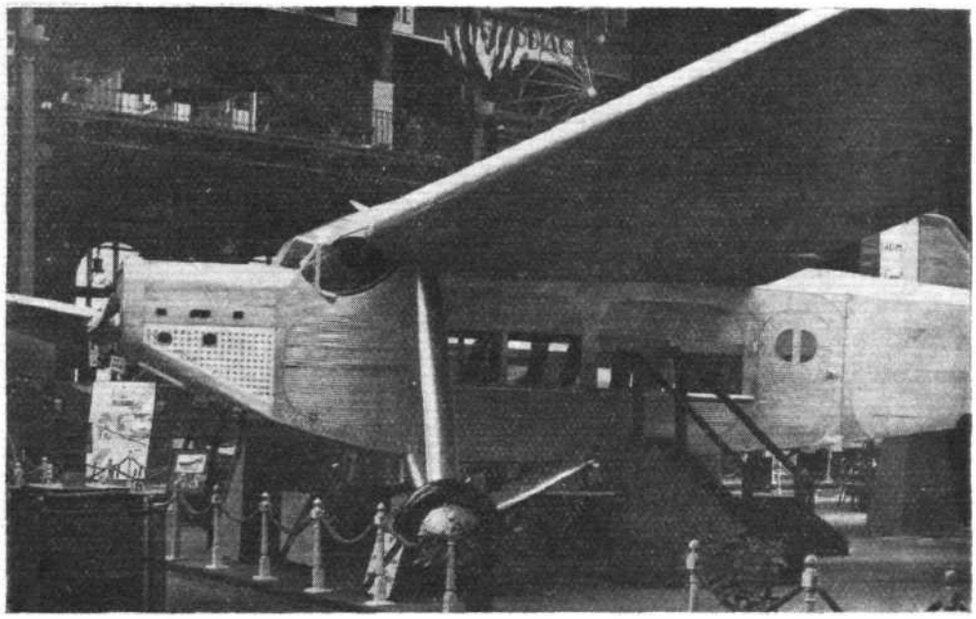


Another view of the Couzinet monoplane (right). Note the retracted undercarriage. On the left the Mureaux type III R.2. (FLIGHT *Photo.*)

long way back from the engines. The fuselage is planked with flat metal plates, but the wing covering has very shallow corrugations running parallel with the chord. These corrugations are closely spaced (about five to the inch). There is a gunner's cockpit in the extreme nose, and another well aft of the wing, in addition to the post in the projecting belly of the fuselage. The undercarriage is of the split type, with wheel brakes, and the wheels are partly enclosed in "spats." The maximum speed of the 140 M is given as 245 km./hr. (152 m.p.h.) at 4,000 m. (13,000 ft.).

S.P.C.A.

The Société Provençale de Constructions Aéronautiques exhibit a commercial machine, a three-engined cantilever monoplane of all-metal construction. The machine, which is fitted with three Salmson 120-h.p. engines, is fitted up as a mail carrier. It has split undercarriage and wheel brakes, and "spats" over the wheels. The maximum speed is given as 200 km./hr. (124 m.p.h.).



The Nieuport-Delage 541 is a large single-engined commercial monoplane. (FLIGHT *Photo.*)

WEYMANN

The firm of Weymann-Lepère exhibits a rather extraordinary little two-seater monoplane. This machine may, perhaps, be described as a "flying boat on wheels," in that it has a boat-like fuselage placed very low over the ground, the occupants sitting side by side in front, and the engine being mounted above the fuselage. In addition to the main wheels there are two smaller wheels under the nose to prevent the machine nosing over on the ground. The windscreen in front of the cabin is of car type, and the whole cabin arrangement looks more like the interior of a car. The engine is of very novel type. It has six air-cooled cylinders in line, and the crankcase is of solid wood, as are also the magnetos!

WIBAULT

The machine shown by Michel Wibault is a large all-metal three-engined low-wing monoplane, not unlike a Junkers in general lay-out, but with flat metal plating instead of the corrugated covering which Junkers favours. In spite of its size, and the fact that it is fitted with three Gnome-Rhone "Titans" of 300-h.p. each, the Wibault carries but 10 passengers.

It will be recollected that hitherto Michel Wibault has used in most of his machines a form of wing construction in which the ribs projected through the metal wing covering, the latter being in panels with turned-up edges. The new machine, type 280 T 10, shows an entirely different form of wing construction. There are two main spars and a number of stringers. The ribs do not project through the covering, and the latter is riveted to the stringers in small flat panels. We had the pleasure of a short chat with M. Wibault himself on the stand and he informed us that quite a considerable increase in speed was obtained by the smooth wing covering, the upstanding edges of the covering in the older Wibault machines presumably disturbing the air flow to some extent. The fuselage, like the wings, is covered with smooth plates without the fore and aft corrugations which one has hitherto associated with Wibault machines.

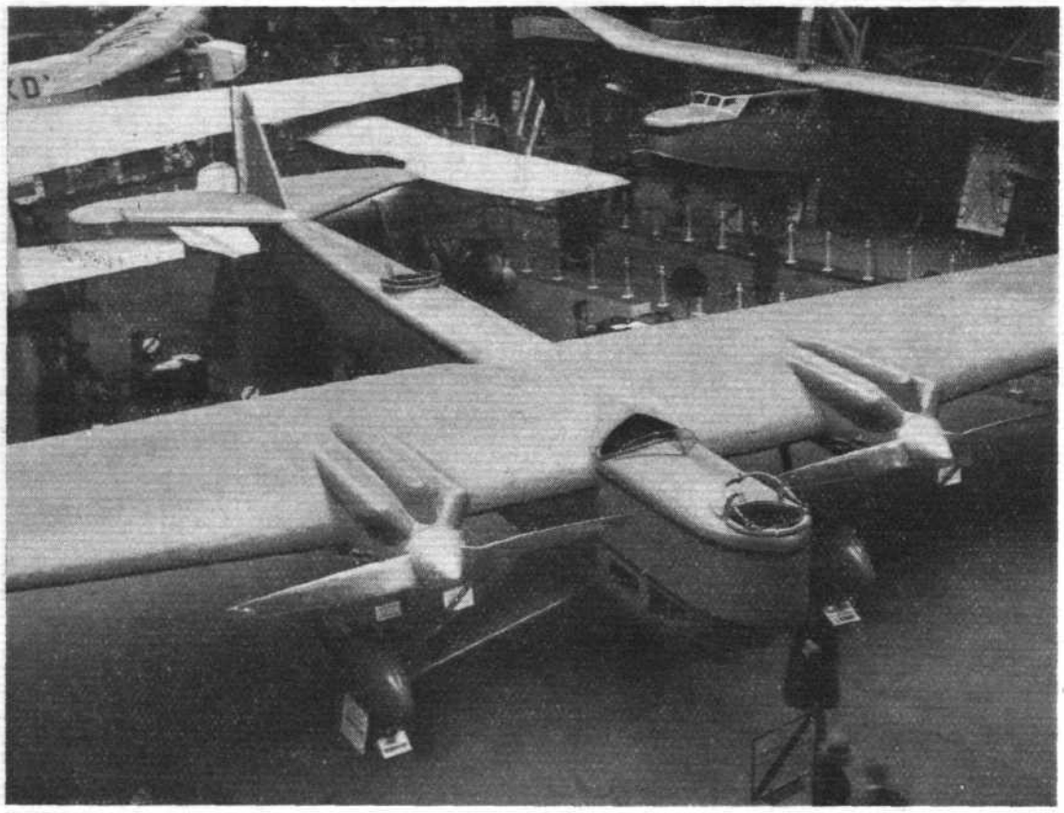
When fitted with three Gnome-Rhone "Titans," the Wibault 280 T 10 has the following dimensions, weights, etc.: Length, 17 m. (55 ft. 9 in.); wing span, 22 m. 600 (74 ft. 2 in.); wing area, 63·5 m.² (683 sq. ft.); tare weight, 3,555 kg. (7,820 lb.); gross weight, 5,750 kg. (12,650 lb.). The machine has not yet been flown, and performance figures are not, therefore, available.

THE GERMAN EXHIBITS

GERMANY is represented, in the Grand Nef, by a single machine, the new Dornier Do. S. On the general German stand, under the gallery, are shown two complete machines: one of the BFW monoplanes, with "Argus" engine, which took part in the International Touring Competition, and a Junkers "Junior" fitted with Armstrong Siddeley "Genet" engine. The Junkers "Junior" is exhibited most effectively, part of the covering being removed to show the internal structure. In addition to these two full-size machines, there is a very large scale model of a Klemm, and a number of smaller models of Rohrbach, Heinkel and Focke-Wulf machines. The latter is a model of the new "Ente," a detailed description of which will be given in FLIGHT shortly.

The Dornier Do. S is, in a general way, similar to the familiar Dornier "Wal" flying boats, but is somewhat larger, although not nearly as large as the Do. X. What, apparently, Dr. Dornier has done is to enlarge his machine, but keeping the number of the crew the same, so that the weight of crew represents a smaller proportion of the disposable load. Certain changes are also to be noted in the wing bracing. Each wing is braced by a single strut of metal, and the structure stabilised in torsion by wires in the planes of the front and rear spars. On top of the wing, wire bracing to the engine mountings is in a single plane only,

The Schreck F.B.A. 310 is a neat little amphibian flying boat carrying pilot and two passengers. (FLIGHT *Photo.*)



The S.E.C.M. Amiot type 140 M is a multi-seater fighter and reconnaissance machine. The engines are neatly cowled in and faired into the wing.
(FLIGHT *Photo.*)

that of the front spars. Short wing stumps springing from the boat hull provide lateral stability on the water, and these stumps are further made to assist the bracing of the wings and the support of the engines by running two struts on each side from the stumps to the wing spars, under the engine mountings. It is to be assumed that this arrangement results in a certain saving in weight, as compared with earlier Dornier "Wal" types.

Structurally, the Do. S follows fairly closely previous Dornier practice. The boat hull, as well as the wing structure is duralumin planked, with smooth plates. The four Hispano-Suiza engines are arranged in two tandem pairs, and nose radiators serve to cool both forward and rear engines. Each radiator is divided into two, so that presumably the two sets of water system in each nacelle are independent of each other. The hull is of usual Dornier single-stepped form, with a pronounced vee bottom forward, a fairly flat step, and a vee-bottom aft of the step. At the stern there is a water rudder operated by the pilot through a separate lever, independent of the air controls.

The internal accommodation is divided into two cabins for passengers, of which the forward, near the bows, has seats for 12 passengers, and the aft cabin seats 10. A kitchen, &c., is provided, and the quarters of the crew are kept quite separate from those of the passengers, being contained in the superstructure on the deck of the hull, ahead of the wing. The forward portion of this superstructure, or "bridge" contains the pilots' cab, seats being arranged side by side, and with dual controls. Behind that comes the navigator's compartment, the engine control room, and the wireless cabin.

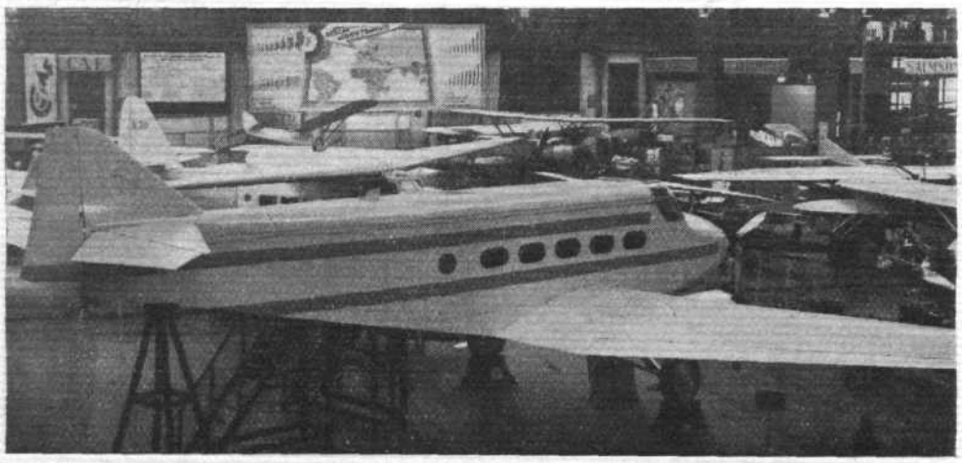
No figures are available relating to weights and performances, but the main dimensions of the Do. S are: length, 25 m. 75 (84 ft. 5 in.); wing span, 31 m. (101 ft. 7 in.); wing area, 209 m.² (2,250 sq. ft.).

HOLLAND'S CONTRIBUTION

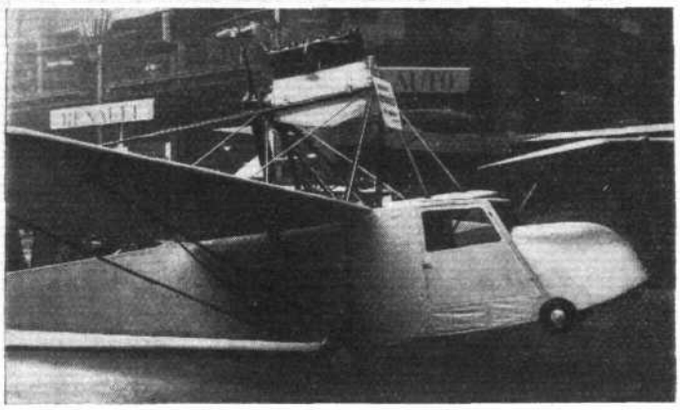
AT this year's Paris Aero Show, the honour of representing Holland rests entirely with the Fokker firm, N. V. Nederlandsche Vliegtuigenfabriek. Two machines are exhibited: the Fokker F. IX three-engined commercial monoplane, and a Fokker C. VIII-W, a three-seater reconnaissance seaplane.

Although generally similar to the F. VII-3m., the Fokker F. IX is not merely an enlarged version of the earlier type, but incorporates several improvements which the long experience with the F. VII-3m. has indicated as desirable. For example, in the F. IX, the nose projects rather farther forward and the pilots' cockpit has also been placed farther forward, so that the pilots are now ahead of the two outboard engines. This placing of the pilots improves the view in nearly all directions, but particularly laterally, the pilots now being able to see past their wing engines. The fact that the pilots' cab is now totally enclosed and faired into the wing probably results in some improvement in aerodynamic efficiency. Another improvement incorporated in the F. IX is that the rear portion of the fuselage has been raised considerably higher than in earlier models, thus giving a greater ground angle and enabling the machine to pull up more quickly.

Structurally, the F. IX does not deviate materially from previous Fokker machines, *i.e.*, it has the usual welded steel tube fuselage and all-wood wing. The cabin is extremely roomy (812 cu. ft.), and has seating accommodation for 20 passengers in very comfortable seats, with plenty of leg room between them, so that passengers are able to make flights of considerable duration without undue fatigue.



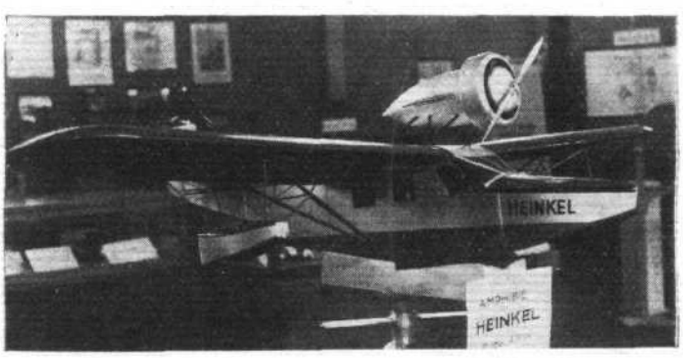
The Wibault 3-engined monoplane is characterised by a perfectly straight back. This is probably to avoid panel beating. (FLIGHT *Photo.*)



The Weymann monoplane is a "flying boat on wheels." Note car type of windscreen. (FLIGHT *Photo.*)

The power plant of the F.IX exhibited at Paris consists of three Gnome-Rhone Jupiters mounted in the usual way, *i.e.*, one in the nose of the fuselage and two outboard suspended from the wings. The main petrol tanks are in the centre section of the wing, between the main spars, and direct gravity feed to all three engines is obtained. The tanks are made of welded sheet aluminium, and there are two with a capacity of 165 gallons each and two with a capacity of 79 gallons each, making a total petrol capacity of 488 gallons (2,220 litres).

The undercarriage is of the divided type and has a track of 23 ft. The arrangement of the undercarriage is the usual, *i.e.*, a bent axle radius rod and the telescopic leg which runs to the outboard engine mounting. The wheels are fitted with Bendix brakes. On the machine exhibited a small tail wheel is fitted in place of the more usual tail skid, and a form of ski is provided which prevents the tail wheel from sinking into soft ground.

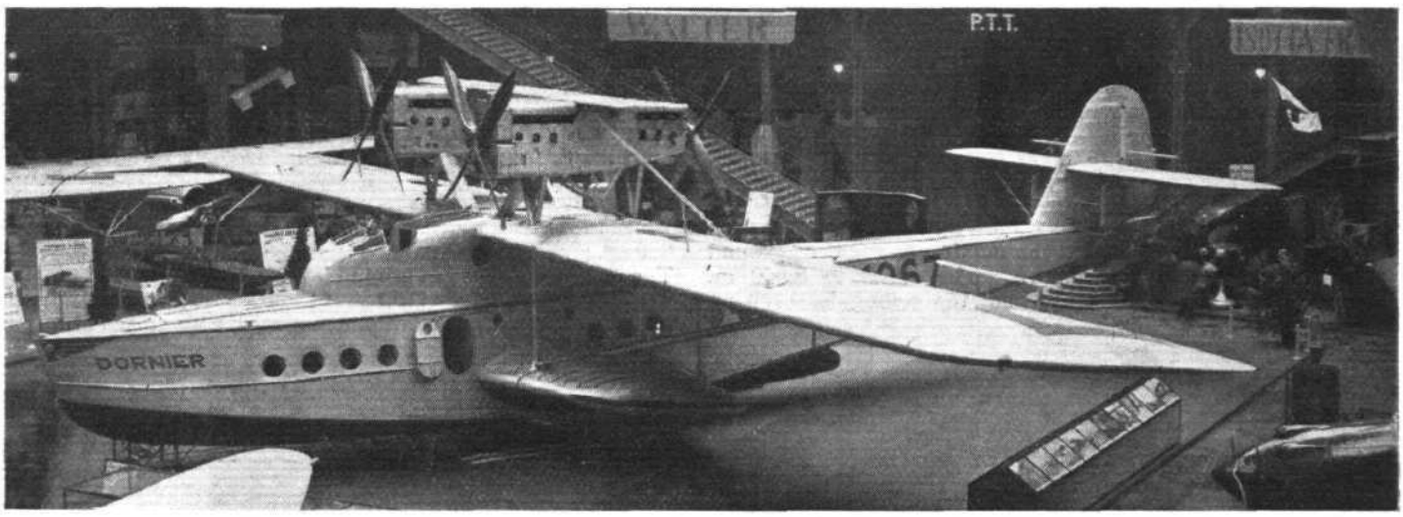


A scale model of the Heinkel amphibian monoplane flying boat. (FLIGHT *Photo.*)

The main dimensions of the Fokker F.IX are : length 63 ft. 4 in. ; wing span 89 ft., wing area 1,109 sq. ft. The tare weight fully equipped is 12,000 lb., and the gross weight is 19,836 lb. When fitted with the Jupiter engines the F. IX has a maximum speed of 130 m.p.h., a cruising speed of 107 m.p.h., and a minimum speed of 67 m.p.h. The range at cruising speed is approximately 580 miles.

The Fokker C.VIII-W with 450 h.p. Lorraine engine is a high wing strut-braced monoplane intended for reconnaissance over the sea. The machine is fitted with duralumin floats of 93 cu. ft. capacity each. The floats are of the single step type and divided into a number of water-tight compartments, with water-tight lids in the deck for inspecting the compartments

The C.VIII-W is of usual Fokker construction with welded tube fuselage, and all-wood wing. The three seats are arranged one behind the other with the pilot in front, the navigator and wireless operator in the middle, and the gunner at the back. The C.VIII-W has a length of 37 ft. 9 in., a wing span of 59 ft., and a wing area of 474 sq. ft. The empty weight is 4,221 lb., and the gross weight 6,062 lb. With 450 h.p. Lorraine engine, the machine has a maximum speed of 125 m.p.h., a cruising speed of 106 m.p.h., and a minimum speed of 59 m.p.h. The climb to 4,000 m. (13,120 ft.) occupied 37 min., and the service ceiling is 4,300 m. (14,100 ft.). With normal quantity of fuel the range is approximately 550 miles at cruising speed.



The Dornier Do.S has the pilots' cockpit raised above the deck level like the bridge of a ship. (FLIGHT *Photo.*)

THE ITALIAN EXHIBITS

OF complete aircraft Italy is represented by five machines, of which the two Fiats are exhibited on a separate stand, while the two Romeos and the Breda are shown on the stand of the Italian Air Ministry. The two Fiat machines are a type AS.2 with Fiat radial air-cooled engine, and a type, TR.1, with the same type of engine. The AS.2 is an open touring machine, while the TR.1 is a cabin monoplane. The two Romeo machines are both light planes, one the Ro.5 and the other the Ro.5s. Both are two-seater monoplanes. The Breda 15s monoplane is generally similar to the machines seen in England, but has been "cleaned-up."

POLISH EXHIBITS

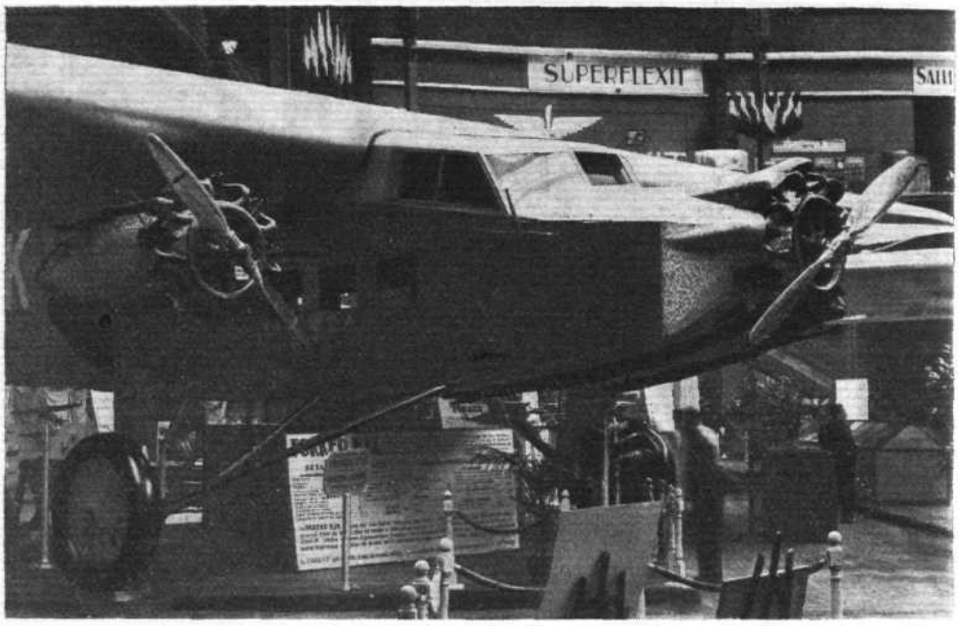
POLAND is represented, at the Paris Show, by two machines designed and built by the National Aircraft Establishments of Warsaw. One is a single-seater fighter with "Jupiter" VI engine, and the other is described as an "Avion de Liaison & de Grand Tourisme." This is fitted with a Skoda-Wright J.5 engine.

The little single-seater fighter exhibited by the Polish National Aircraft Establishments is known as the P.VI, and is of unusual design both aerodynamically and structurally. It is a strut-braced monoplane in which the formation of the wings resembles that found in many birds : Although the main portion of the wings is above the deck of the fuselage, the wing roots are swept down to the top of the fuselage into which they are faired. The object of this arrangement is probably chiefly that of providing as good a view as possible for the pilot, but there may also be some aerodynamic advantage in increasing the angle at which the wing meets the fuselage. By sweeping the roots down to meet the curved top of the fuselage, the angle is increased,

and interference is likely to be reduced. The P.VI is a very attractive machine in appearance, and the performance figures quoted appear to indicate that it is as efficient as its pleasing appearance would lead one to expect.

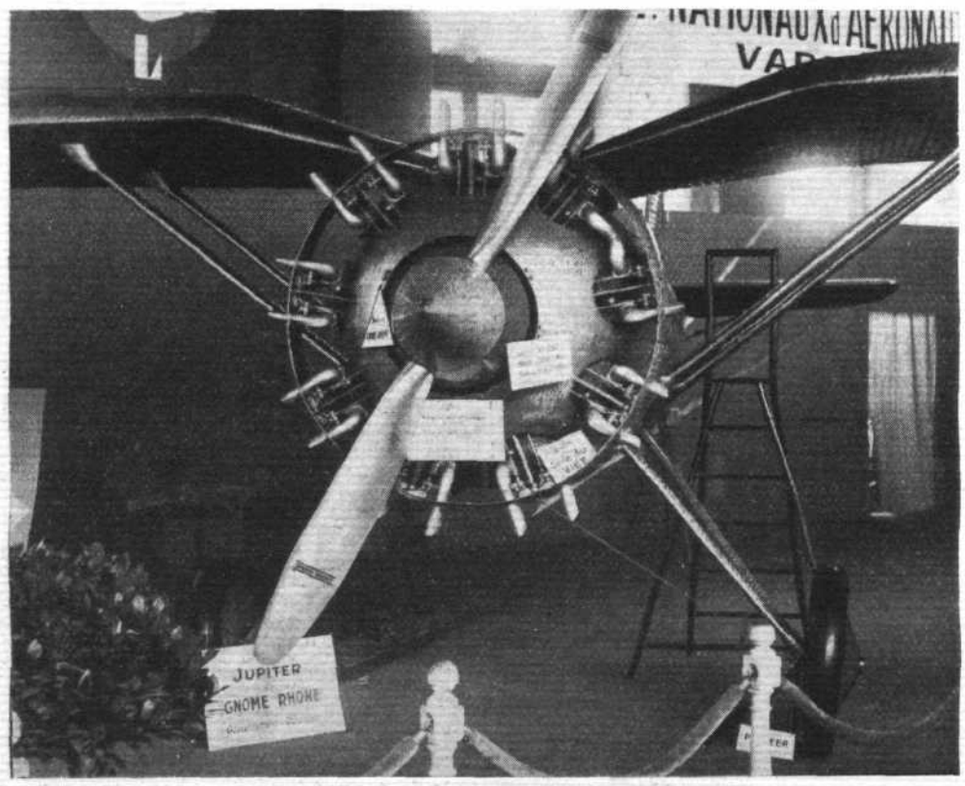
The wing structure is entirely of metal, with two spars of I section, ribs, stringers, etc., and corrugated duralumin covering. The undercarriage is of very unusual type in that the shock absorbers are housed inside the fuselage. Each undercarriage half consists of a steel tube Vee, to which the stub axle is rigidly attached. The upper ends of the legs are hinged to the fuselage, and braced inwards by a single wire from the apex of the vee. At its upper end this wire is secured to the shock absorber inside the fuselage. Thus when the machine is alighting, the tendency is for the wheel to swing outwards and upwards, but this it is prevented from doing by the wire which, through its pull on the shock absorber, compresses the latter and so provided the springing. It is stated that tests have been made in which a very bad landing was emulated, and that this type of undercarriage was found to stand up well. It is certainly neat, and should be of low air resistance.

The P.VI has a length of 7 m. 160 (23 ft. 5 in.), a wing span of 10·300 m. (33 ft. 10 in.) and a wing area of 17·3 sq. m. (186 sq. ft.). The gross weight is 1,340 kg. (2,949 lb.), made up as follows : machine and engine 883 kg. (1,943 lb.), fuel 250 kg. (550 lb.) and useful load 207 kg. (456 lb.). When fitted with Bristol " Jupiter " VI engine the maximum speed at ground level is 292 km/h. (181 m.p.h.). The climb to 8,000 m. (26,200 ft.) occupies 33 min., and the ceiling is 9,000 m. (29,500 ft.).



The Fokker F.IX 20-passenger machine is fitted with three Gnome-Rhone " Jupiters." (FLIGHT *Photo.*)

The other machine exhibited, type L.2, is a strut-braced parasol monoplane two-seater of all-metal construction. It is fitted with Handley Page automatic slots all along the leading edge, and is claimed to be a particularly safe and easy machine to fly. The engine is a Skoda-built Wright " Whirlwind " of 225 h.p. The dimensions of the L.2 are as follows : length 7·92 m. (25 ft. 11 in.); wing span 13·4 m. (43 ft. 11 in.) ; wing area 25·8 sq. m. (277 sq. ft.). The tare weight is 880 kg. (1,935 lb.) and the gross weight 1,282 kg. (2,820 lb.). The maximum speed at ground level is 183 km./h. (110 m.p.h.). The climb to 4,000 m. (13,120 ft.) takes 21·25 min. Minimum speed with slots open 39 m.p.h., and with slots closed 71 m.p.h.



The Polish Fighter. Type P.VI. Note the formation of the wings. (FLIGHT *Photo.*)

PRIVATE FLYING AND CLUB NEWS

1931 DEVELOPMENTS at Stag Lane: Very shortly we shall see the 1931 models of the Puss Moth and Moth flying around the country. The chief new features of these were illustrated in FLIGHT recently, but there are one or two internal improvements which were not so obvious from these photographs. The Puss Moth will have a new type of ventilation which is a long, very neat type of Louvre each side of the cabin above the doors, and the air can be admitted or excluded in a very ingenious manner by opening or closing the upholstery on the inside with a "Zip" fastener. On this machine Bendix brakes are included as standard, together with Dunlop low-pressure semi-balloon tyres, and these brakes are so arranged that when necessary they can both be put on together by a lever situated conveniently at the left-hand side of the driver. There is also a small pawl which can be tripped up with the finger when it is desired to lock the brakes in the "on" position. Independent of this lever, each brake is also operated by the movement of the rudder bar, so that putting on the left rudder, *i.e.* pushing the left foot forward, also puts on the left brake and makes taxying a very simple matter. Incidentally a further help towards this, is the tail skid which has now been disconnected from the rudder, and is therefore quite free to swing round at right-angles and offer no resistance to the movement of the tail when the machine is slewed round on one wheel, as with these brakes it can be. The upholstery has also received attention and the seats are now somewhat higher in the back and broader at the sides. The sliding window on the left hand side of the pilot now has its lower half made to open, which will be distinctly more pleasant when flying in bad weather and for the passenger there is also a special arrangement which can be fitted as an extra, whereby the rear windows on either side are made square so that they can slide open in a similar way to which those in the doors do. Last year the windows in the doors were operated by a clip on the window which almost invariably caused them to crack right across. This has now been altered and each pane has an aluminium clip extending the whole length of it at the bottom, much in the same way as the new Morris cars have. The ordinary Moth will not have brakes for the present, as with the balloon tyres it is possible to drop the machine very dead without damage and to land in an extremely small space, further, the fitting of brakes would have necessitated re-designing the undercarriage, which would have naturally put up the cost very considerably. The pilots' wind screen will now be the three-piece Triplex type such as is used on all R.A.F. Moths and this is distinctly more pleasant than the cellon type, because it can be cleaned very easily. By way of testing the utility of these wheels and tyres Capt. Broad has landed an ordinary Moth on a recently ploughed and harrowed field and taken off again successfully.

BERKS, Bucks and Oxon Aero Club held the first of their annual dances at the Club House, Reading, on Saturday, December 6. An excellent band was engaged from Caversham and all those who attended thoroughly enjoyed the evening. It was at first thought that many of the visitors, especially those from London and Hanworth would be unable to arrive on account of the fog, but this providentially thinned and no one had any difficulty in getting there. It was a little disappointing that a greater number of local members did not turn up, since there is no doubt that they would have thoroughly enjoyed the evening. By next time, however, the success of the show will have been heard of, and no doubt the efforts of the staff to cater for everyone's welfare will be better appreciated. Incidentally, the said staff prepared their own refreshments and certainly managed to provide just what was wanted. They not only produced the quality and variety to satisfy everyone, but also just the quantity required so that they were not faced with having too little and disappointing people, nor with having a large amount of unwanted food left over for the next day. The benefits of being a member of the N.F.S. organisation were well illustrated during the previous week, when a Moth, which had been crashed and suffered a broken bottom longeron, was returned to the workshops at Hanworth by Monday afternoon, repaired by their organisation there under the control of Major Williams, and returned ready for use to Reading by Saturday. It is this sort of service for the provincial clubs which justifies the original conception of a scheme such as N.F.S.

ENTERPRISE at Doncaster.—The Doncaster public are evidently air-minded and greatly interested in aircraft. E. W. Jackson and Son, Ltd., have recently had an Avian ("Hermes") on view in their showrooms at Halgate, Doncaster, and during the week that it was there, between 8,000 and 9,000 people came to see it. This is an exceptionally good sign, and augurs well for the proposed Doncaster Airport. It may be of interest to private owners to know that this firm whose head office is at Cheswold Works, Frenchgate, is the sole service station for "Cirrus" engines in that district.

PARABLES of a Pilot: The Journal of The Montreal Light Aeroplane Club has published the following "Parables of a Pilot," and while they are amusing they contain such a large measure of commonsense that we think they are well worth reading.

"1. My sons, hear the advice of thy great-grandfather, and forsake not the laws of those who fly safely.

"2. For the days of my life are legion, and I have instructed much youth of the land in the ways of an aeroplane in the air.

"3. Verily, men do foolish things thoughtlessly, knowing not why, but an aeroplane doeth naught without a reason.

"4. Let not thy familiarity with aeroplanes breed contempt, lest thou become exceeding careless at a time when great care is necessary to thy well-being.

"5. A wise pilot scenteth trouble afar and avoideth a forced landing in the waste spaces.

"6. My son, obey the law and observe prudence. Spin thou not lower than 1,500 cubits nor stunt above thine own

A NEW AERODROME? No prize is offered for guessing where this aerodrome is, and those in doubt should ask the aviation department of B.P., Ltd.

domicile. For the hand of the law is heavy and reacheth far and wide throughout the land.

" 7. Incur not the wrath of those in authority by breaking their rules; for he who maketh right-hand circuits shall be cast out into outer darkness and whoso flyeth low over football games shall be forever damned.

" 8. As the telephone operator who giveth the wrong numbers, so is he who extolleth his exploits in the air.

" 9. For I have watched him do his stuff on the ground; Lo, for an hour have I heard him talk of himself, till he thinketh he is the best pilot ever.

" 10. He is like unto a woman who knoweth not how to say good-bye on the telephone; and the truth is not in him.

" 11. Though he be as honest as a child in all else, yet will he lie about his aerial adventures. His chest protrudeth and he maketh other men to be weary.

" 12. He shall enlarge upon the dangers of his adventures, but in my sleeve shall be heard the tinkling of silvery laughter.

" 13. Let not thy prowess in the air persuade thee that others cannot do even as thou doest; for he that showeth off in public places is an abomination unto his fellow pilots.

" 14. More praiseworthy is he who can touch tail-skid and wheels to earth at one time, than he who loopeth and rolleth till some damsel stand in amaze at his daring.

" 15. He who breaketh an undercarriage in a forced landing may in time be forgiven, but he who taxieth into another 'plane shall be despised forever.

" 16. Beware the man who taketh off without looking behind him, for there is no health in him; verily, I say unto you, his days are numbered.

" 17. My son, another student pilot shall come unto thee saying, Hearken not unto the words of thy great grandfather, for he doteth; list to me while I tell thee how thou shouldst do so-and-so:

" 18. But a little knowledge is oft-times of great danger, and thou knowest full well that my teachings are founded on much experience.

" 19. Clever men taketh the reproofs of their instructor in the same wise, one like unto another; with witty jest, confessing their dumbness and regarding themselves with humour. Yet do they try again, profiting by his wise counsel and taking not offence at naught that is said.

" 20. For who so hearkeneth to his precepts shall fly in safety, and shall be quiet from fear of trouble.

" 21. A reproof entereth more into a pilot of sense than an hundred compliments into a fool.

" 22. Mark the lady pilot, how she acquireth a fondness for pants; yea, though she be otherwise modest, yet doth she dress herself in ungodly raiment, displaying her limbs. Though she clotheth herself in breeches, yet doth she wear high-heeled shoes alway. Her mirror must know her naught, else would she refrain from masculine attire.

" 23. Though she fly alone at great heights, yet is her powder puff close to her hand; her appearance causeth her more concern than the running of her engine.

" 24. Knowest thou a pilot who criticiseth not another pilot's flying? I say unto you, there is not one who cannot point out another's faults and advise him, what he should do.

" 25. Better is a dancing partner with two left feet than he who laggeth behind in a formation and keepeth not his appointed place; for the leader breedeth wild thoughts.

" 26. As a wet dog who shaketh himself beside thee, so also is a pilot who usurpeth thy rightful place when landing from a formation. Woe be unto him who landeth before the leader.

" 27. Though the leader taketh thee over the city at low altitudes, having no regard for thy personal safety, yet wilt thou follow him closely; but on the ground wilt thou revile him after.

" 28. As a plate of cold soup, yea, even as a kiss from one's sister, so also is a flight without a purpose or objective; it lacketh a kick.

" 29. As a postage stamp which lacketh it's glue, so are words of caution to a fool; they stick not, going in one ear and out the other, for there is nothing between to stop them.

" 30. If thine instructor shouldest say unto thee: Take thou this 'plane, for it is as good as the one of thy choice; then shalt thou listen politely but ignore his counsel.

" 31. For if thou wouldst do well in competitions, see that thou hast the 'plane which thou thinkest thou can fly with greatest ease.

" 32. My son, hearken unto my teachings and forsake not the laws of prudence, for the reckless shall not inhabit the earth for long.

" 33. Hear instruction, and be wise, and refuse it not: thus wilt thou fly safely; length of days, and long life, and peace shall be added to thee."

GLIDING

THE Bradford Gliding Club.—The Club put in a good day's flying on Sunday, November 30, when members gained some valuable experience on a steeper gradient than that in the regular flying field.

This field has a slope of about one in ten and is rather rough in places, but no damage was done to the glider, and when the wind is suitable this field is large enough for " A " tests.

The trailer is now being towed by a motor-cycle combination, which has been kindly loaned to the club by Phelon & Moore Ltd., of Cleckheaton, and on the road this method is found easier and cheaper than using a car.

Gliding will take place this week-end again at the Pastures, Apperley Bridge. Saturday at 1.30 p.m., and Sunday at 9 a.m.

Those interested in the club should apply to the Hon. Secretary, 17, Roslyn Place, Gt. Horton, Bradford.

THE FALKIRK and District Aviation Club took delivery of their first glider on Saturday, November 29. The machine, a B.A.C.2, was demonstrated before Club members and a fairly large crowd by Mr. C. H. Lowe-Wylde, the designer.

Although the weather was delightful, the absence of wind made long flights impossible. Mr. J. W. Shaw, Chief Instructor of the club, however, made a successful glide.

In the evening the Council entertained Mr. Lowe-Wylde and Mrs. Green of the British Aircraft Company to dinner, and a very successful day terminated in a lecture on Gliding in the club's premises at the Falkirk Iron Works.

The club is making satisfactory progress under the guidance of the energetic president, Major R. H. Salvesen, and the enterprising secretary, Mr. Andrew L. Tomison.

A constructional class is being formed and a syllabus prepared for lectures to be given weekly to club members on different branches of aeronautics.

The Provost of Falkirk is an enthusiastic supporter, as is the local Publicity and Development Association whose offices are used for council meetings.

SOUTHDOWN Skysailing Club.—On Sunday, November 30, there was a good attendance of members in spite of a damp mist. The wind was westerly, but very light.

Flt-Lt. Brown, the Club Captain, started the day well by making a good glide of $32\frac{1}{5}$ secs. As this flight was officially observed, it qualifies the pilot for his " A " certificate.

Capt. Russell then followed with an excellently judged flight of $32\frac{4}{5}$ secs., also qualifying for his " A " certificate. But the wind was now failing, so Mr. E. K. Robins just missed taking his ticket. His times were 29 secs. and $29\frac{2}{5}$ secs. Very hard luck. The wind having dropped entirely, no more tickets could be taken; other glides were made as follows:—Flt-Lt. Wood, 18 secs., Mr. S. Wood 15 secs. Messrs. Lawson and Parker also made good glides.

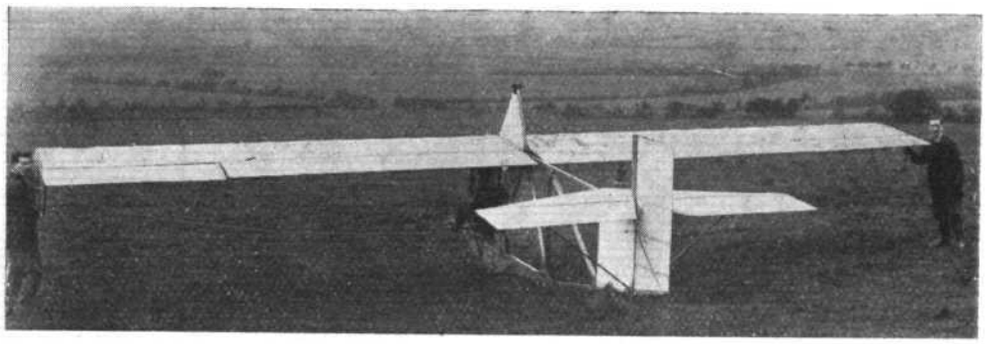
A number of *ab initios* also did ground slides and hops, and already show marked improvement. Many should soon be making good straight flights.

The club is certainly indebted to Mr. J. H. Ely, one of our most enthusiastic and energetic members, for a tail-release device which he has made up. This gadget works excellently and requires only one man or boy to operate it, so that more

members are available for the "ropes." We also obtain better "take-offs" by using a greased run-way and a metal shoe under the skid. This shoe is not damaged by stones on the ground—another consideration of some importance.

In order to prevent beginners pulling back when launched, we have limited the backward movement of the stick by a tie, and find that this does keep would-be soarers on the ground, and should save considerable repair costs!

For particulars of membership apply to the Hon. Secretary, Mr. A. York Bramble, New Yorke Hotel, Bedford Square, Brighton.



HOME CONSTRUCTION: A view of the Dickson glider built by the Aircraft Club, Harrogate, from "Flight" drawings

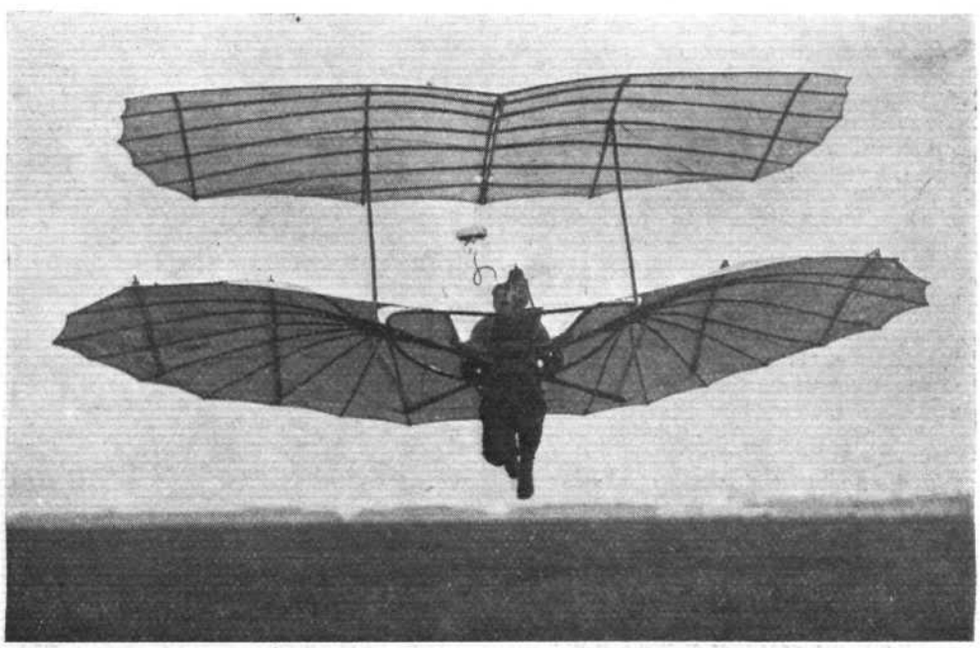
CONONLEY and District Gliding Club: This club attended the meeting held by the Scarborough and Accrington clubs at Accrington on November 29 and 30. Quite a considerable amount of flying was done and two members succeeded in qualifying for their "A" licences under the tuition of Herr Magersuppe. At one time the glider landed on a patch of ground in the middle of a bog and most of the members got thoroughly wet, but the advantages of a "Rice" caravan, which one of the members had brought with him, were well brought home, when everyone was able to dry themselves and sit down to a good tea in warmth and comfort. The Bolton club was at the same meeting, though they were unable to fly on Saturday as their machine was to have been transported by the Cononley club, whose trailer gave some trouble, so that the machine could not be used until Sunday. Herr Magersuppe flew the Cononley club's Dickson glider and found it admirable for training purposes, it being very steady and particularly nice to land.

LEEDS Gliding Club have had to contend with a great deal of bad weather lately, but in spite of this managed to get in a good deal of gliding on Saturday, November 29. At present they are using a Reynard II glider which they find suits their purpose quite well. Their membership is now growing very rapidly, and those who are interested should apply to the Hon. Secretary, 32, Fearnville Grove, Roundhay, Leeds.

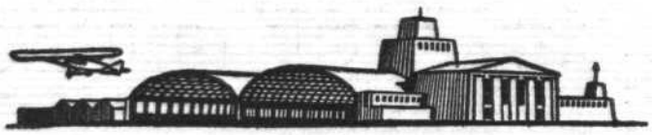
THE SAILPLANE Club suffered one of the many set-backs which have to be borne cheerfully in this country, last Sunday. Some dozen or more keen members, many of whom had come from London, including a lady member whose profession being that of a nurse, necessitated her return by about 4 p.m., gathered at 11 a.m. at Horton Farm, Small Dole, Sussex, and assembled their glider ready for the weekend practice. The weather, however, came down thick and cold; the wind got windier and the rain got wetter; undeterred, however, many members were given practice on the pivot which has been developed by the club. We tried this out ourselves and were agreeably surprised to find that by balancing the glider on this one could gain a very good idea of the efficiency and action of the controls and we imagine that for those members who have had no previous air experience at all, that this should prove a very sound way of teaching them what to do before they are actually launched, even for aircraft pilots it must be useful to let them get accustomed to the controls—or lack of same!—of a glider without actually flying.

THE AIRCRAFT Club, Harrogate, will hold their Annual General Meeting on January 16, 1931. Proposers and seconders of new members for the committee, or for any office in the club should give notice in writing at least seven days previous to this meeting. On Friday, January 30, Mr. R. Gosling will read a paper on "Model Aeroplanes, their construction and flying," while on Friday, February 20, Major G. King will give a lecture on "Instruction in flying aeroplanes." Besides being open to members of the club, these lectures are open to all members of clubs belonging to the Association of Northern Gliding Clubs. This week we illustrate the Dickson glider, which the club constructed themselves. A few modifications have been made which were found to be desirable during the building, but in general the machine remains the same as on the drawings issued by FLIGHT. Wire bracing has been used instead of cable bracing. Shock absorbers were fitted in the landing wires at the pylon top, and small alterations were made to the wing tips, etc. It is interesting to note that the cost has worked out to just over £19. The glider has been found to be perfectly satisfactory in every way, and a large amount of flying has now been done with it without accident.

ANOTHER FLYING School Formed—The West Kent School of Flying has recently been formed by Mr. Meadway at Maidstone, who is licensing the old Kinghill aerodrome situated some five miles south-east of Maidstone, and this will now be known as the Maidstone aerodrome. At present he has a Moth (Gipsy) and an Avro 504K, and Mr. C. G. Hancock will be his chief pilot and instructor. The Corporation of Maidstone are said to be very interested in the scheme, especially as this aerodrome will lie directly on the London to Paris air liner route, and as such may possibly be used as an intermediate landing ground in case of necessity.



AFTER LILIENTHAL: A motor-assisted glider which has enabled Herr Hans Richter to make short hops into the air at Templehof Aerodrome, Berlin.



AIR TRANSPORT

FLYING IN NEW ZEALAND

FOR some years when one wrote about flying in the British Empire one had to confine one's remarks to Great Britain, Australia, and Canada, adding pious hopes that South Africa, India, and New Zealand would in time come into line. By the year of grace 1930, something at least is happening in South Africa and India, and very much more is about to happen. And now with great pleasure it is possible to record that things are happening in New Zealand, too—" Last, loneliest, loveliest, exquisite, apart," as Kipling (if quotation from memory may be pardoned) calls that very gallant little Dominion. There have been flying clubs there for some years past, and now a start is being made with regular air services.

There were good reasons why New Zealand should not rush into air transport. It is not, like Australia, a country which naturally clamours for services by air as a necessity of existence. Great parts of the country are hilly, and the railway communications are good in proportion to the size and distribution of the population. Both these factors make it incumbent on investors to think carefully before they put their money into a form of transport which needs special circumstances if it is to pay a dividend. Hitherto the experience of the Dominions, and of Europe as well, is that airways have to fight a hard battle if they are to hold their own in competition with a good rail service.

There are in New Zealand two companies which seem to mean serious business. Both were formed in 1929. National Airways (N.Z.), Ltd., has an authorised capital of £250,000, of which £60,000 (according to the latest available information) has been underwritten. The directorate consists of business men from Auckland, Wellington, Christchurch, and Dunedin. The object of this company is to institute an air service daily between Auckland and Dunedin, traversing the Dominion from north to south. The company has announced that it would not start operations without a Government subsidy, and this does not seem to be forthcoming this year. On November 4 the Postmaster-General announced that though the Government was not prepared to grant an immediate subsidy, it was willing to let a contracting firm have the receipts of the air mail stamps less a certain percentage to cover transport from air port to post office. Later, during the debate on the Post and Telegraph Estimates in the House of Representatives, the P.M.G., the Hon. Mr. J. B. Donald, expressed the hope that the air service between the four cities would be established during the coming winter. He added in an interview that details of the scheme were being considered by the Cabinet.

The second important company in New Zealand is Dominion Air Lines, Ltd. This has a capital of £200,000, of which over £15,000 has been subscribed. This company has conceived the idea of opening a service between Wellington and Nelson, and a representative of the company recently visited England to buy a suitable amphibian boat. The type which was chosen was the Saro "Windhover," with three Gipsy 2 engines. This boat was despatched to New Zealand about six weeks ago, and should have arrived by now. It was accompanied by an experienced engineer from the Saunders-Roe works, who will remain in the service of Dominion Air Lines. Our map shows the position of the two towns between which it is intended to ply.

There are other flying companies in the Dominion. The Goodwin Chichester Aviation Co., Wellington, the Hamilton Airways, Ltd., and New Zealand Airways of Dunedin, have been engaged for the last 18 months in intermittent taxi work with light aeroplanes. The N.Z. Air Survey and Transport Co. of Auckland also carry out air taxi work, and a certain amount of air photography. Rotorua Airways, whose chairman is Mr. J. D. Davys, have recently imported a Puss Moth, which was flown from the Air Force base at Hobsonville (Auckland) to Hamilton on October 16 by the pilot, Mr. R. R. Money.

Another rumour which has reached us is that a service is intended between Wellington and New Plymouth, but as

Aerodrome map of New Zealand.

yet we have received no authentic details. This would seem to be a route for landplanes rather than seaplanes.

The flying clubs of New Zealand will be dealt with in our special club section.

Our map shows the aerodromes of New Zealand, Air Force and civil. The civil aerodromes are divided into those which have been licensed and those which are under construction. The map shows that there are two aerodromes at Auckland, the Air Force base for both landplanes and seaplanes at Hobsonville, seven miles to the north-west of the city, and a civil aerodrome 11 miles south of the city of Manukau harbour. It is not, however, possible to make clear on the map that there are two aerodromes at Blenheim, a civil one at Omaka Domain, about two miles to the south of the city, which is controlled by the Marlborough Aero Club, and a commercial one, 4 miles out along the Middle Renwick road. The full list is as follows :—

N.Z.A.F. Aerodromes

Auckland, Hobsonville, 7 miles N.W. of the G.P.O., Auckland. Combined landplane and seaplane base. Open to public traffic by air. The base is situated in the upper reaches of the Waitemata Harbour, the land in the immediate vicinity being undulating country rising to 200 ft. The aerodrome is on a tongue of land immediately south of Pine Island. The area of the landing ground is 130 acres. The slipway can accommodate any existing type of flying boat at any state of the tide. The main hangars and workshops are of reinforced concrete. The base has not yet been completed.

Christchurch, Wigram, 6 miles south of Christchurch and ½ mile from Sockburn railway station. A landplane base, open to public air traffic. The surrounding country is flat, mostly under cultivation. The aerodrome is 73 ft. above sea level and 14 miles inland, and so it is not subject to fog. Being over 50 miles from the Southern Alps, it is less affected than most parts of Canterbury district by heavy N.W. winds. The total area is about 210 acres, of which 159 comprise the landing ground. The sub-soil is sandy. The aerodrome is equipped with wooden hangars and workshops.

Civil Aerodromes

Auckland, 11 miles S. of the city, on the mouth of the Pukaki creek, on the Manukau harbour at Ihumatao. It is about 80 acres in size, almost circular in shape. There is a hangar to take five machines. There is a post office 2 miles away, and a railway 5 miles off at Onehunga. The aerodrome is owned by the Auckland Aero Club.

Dannevirke, 2 miles S.E. of Dannevirke town. It measures 800 by 350 yards, and has a hangar to hold one light aeroplane, folded. There is a telephone near by, and a railway 2 miles off. The aerodrome is leased by the Hawke's Bay and East Coast Club.

Hastings, 3 miles S.W. of Hastings town. It is 600 by 700 by 350 by 600 yards, and is only suitable for light aeroplanes. There are power lines on the east side, and poplar trees, 15 ft. high, on the north side. It is controlled by the Hawke's Bay Club.

Martinborough, a municipal aerodrome, one mile south of the town, about 52 acres, approximately square. There is a hangar 32 by 36 ft.

Hawera, 3 miles N.E. of the town, 707 by 536 by 427 yards. There is a hangar 60 by 40 ft., and dressing rooms. There is a telephone at the aerodrome, which is controlled by the Hawera Aero Club.

New Plymouth, 6 miles E.N.E. of the town, on the main highway to Auckland, and 1½ miles from the coast. It has an area in use of 300 by 600 yards. There is a hangar 45 by 30 ft., with dressing rooms. It is leased by the New Plymouth Aero Club.

Wellington, a municipal aerodrome 4 miles S.E. of the City, 70 acres in extent, 665 by 495 yards. There is a hangar, with dressing rooms. There are power lines and houses near by. There is a telephone at the aerodrome, and a tra line passes it.

Blenheim (Omaka Domain), a municipal aerodrome, 2½ miles S. of the town, 60 acres in extent, 650 by 550 yards. It still requires enlarging and levelling. It has a hangar 48 by 35 ft., and a telephone. There is a ground engineer on the spot. A good road leads to the town. The aerodrome is controlled by the Marlborough Aero Club.

Blenheim (Fairhill Estate), 4 miles from the town on the Middle Renwick road. It is 200 acres square, and has a hangar for two folded light aeroplanes, with telephone. There is a good road to the town.

Ashburton, a municipal aerodrome 2½ miles N.E. of the town. It is rectangular, 775 by 575 yards, 50 acres in extent, with a good surface. There is a hangar for four folded light aeroplanes, with a telephone. There is a good metalled road, and a post office is 3 miles away. The municipality has an option of purchase over the adjoining 42 acres.

Aerodromes under Construction

Whangarei.—An area about 650 yards square of level sand on the Pohi island reclamation, 1 mile S.E. of the town, has been set aside for a municipal aerodrome. It needs further draining and levelling, but is fit for light aeroplanes.

Hamilton.—The Te Rapa aerodrome, 1½ miles N. of Hamilton, has an area of 150 acres, with 800 yards runways. It was lately used by the Hamilton Airways, Ltd. The land is private.

Rotorua.—An area of 80 acres fronting Fenton Street, 1½ miles from a post office, will be developed as a municipal aerodrome. The cost of filling Alum lake, diverting Alum creek, and clearing is estimated at £6,000. An area of 300 square yards in the centre is suitable for light aeroplanes.

Tauranga.—The dry bed of the Waikaree estuary west of the town, about 500 yards square, is to be developed as an aerodrome. The harbour is suitable for seaplanes.

Gisborne.—An area of 99 acres, 3 miles S.W. of the town, is now being developed as a municipal aerodrome. A central area, 300 yards square, and two runways, 200 by 550 yards, have been levelled.

Masterton.—An aerodrome with hangar for light aeroplanes has been prepared for the use of the Wairarapa Aero Clubs on South Road.

Wanganui.—A rectangular block of land, about 300 acres, 2½ miles from the post office, on the south side of the Wanganui river, has been decided on for a municipal aerodrome.

Dunedin.—Russell's property of 100 acres of level ground, 1½ miles from Mosgiel, has been acquired for the immediate use of the Otago Aero Clubs, and for a future municipal aerodrome.

Invercargill.—An area, about 800 yards square, partially developed, which was previously used by the Borstal Institute, is being developed for the Southland Aero Clubs, and as a municipal aerodrome.

The London Chamber of Commerce and Air Mails

THE Postmaster-General has consented to receive a deputation from the London Chamber of Commerce at the General Post Office on Tuesday afternoon, December 16. Various questions affecting the air mail will be raised. The deputation will be led by the Lord Herbert Scott, President of the Chamber, and the other members will be : Sir Geoffrey Clarke, deputy-chairman of the Council of the Chamber ; Colonel the Master of Sempill, chairman of the Civil Aviation Section ; Sir Robert McLean, deputy-chairman of the Civil Aviation Section ; and Mr. A. de V. Leigh, secretary of the Chamber.

CROYDON WEEKLY NOTES

THE almost continuous fog and bad visibility of the past week has seriously hampered all transport between England and the Continent. It is good to learn, however, that, in such a week when shipping was held up in the Channel for forty or fifty hours, the number of passengers passing through Croydon has increased to 352 and the freight to 40 tons. This seems to show that serious though fog may be to air transport, its effect is probably felt even more on the surface.

Whenever the conditions allow of it, the Belgian night mail operated by the Sabena Company continues to work. Night mail flying is certain to develop and become a very important branch of international communication. The Belgians appear to regard their present service as an investment against the time when that development takes place. Their experience will be extremely valuable and give them a great advantage over any rival service which may eventually appear. Amongst the passengers carried by Sabena this week has been M. Lippens, the Belgian Air Minister. They do not yet carry any passengers on the night mail and the Minister crossed by day.

The only other celebrities we have been able to trace this week are the Dolly Sisters, who crossed to Paris on Friday. Though no regular machines were operating on account of the fog, the sisters chartered a special Breguet from the Air Union.

The revival in business which Cirrus Aero Engines, Ltd., are experiencing is being well maintained and Mr. Holman now reports orders having been received from Poland for the Inverted "Hermes." Another Croydon firm which is going out for overseas trade is the Robinson Aircraft Co., Ltd Having had many enquiries from the Continent, Mr. Robinson has himself gone over in the "Redwing II" with Flight-Lieut. N. M. S. Russell. They are now at Le Bourget demonstrating.

Our sympathies are with Miss Spooner and F/O. Edwards in their bad luck on the Cape flight. Their non-stop run to Rome was a fine effort. The tanks being filled up there, they must still have had about 60 gallons of fuel on board when they crashed at Belmonte. Since their fuel system had no jettison, and 40 of these 60 gallons were located low down in the machine, it is remarkable that they floated for so many hours. The wooden construction, together with the great buoyancy of the thick ply covered wing, are undoubtedly responsible, and both Miss Spooner and Edwards have probably to thank the soundness of the woodwork for their lives. It is to be hoped that they will try again.

Two German pilots who landed at Croydon recently asked that their tanks might be charged with "Strax" spirit. They were disappointed when no one had heard of it until they found that "Strax" is only the German trade name for "B.P." Whilst "B.P." is known as "B.P." in most European countries, their No. 1 is called "Strax" in Germany, "Essence Energic" in France, and "Mil" in Norway. To further complicate things in the minds of frontier-hopping pilots, their benzol mixture goes by the name of "Olex" in Germany, and their No. 3 of "Tourisme" in France. Mr. Ibell tells us that they are trying to standardise the letters "B.P." throughout the world. It should certainly improve their business to do so if the change over is made gradually in the countries concerned.

M. L.

AIRISMS FROM THE FOUR WINDS

Miss Spooner's African Flight

MISS WINIFRED SPOONER and Flying Officer E. C. T. Edwards have experienced an exciting check to their attempt to fly from England to the Cape in record time. As reported last week, they left Croydon on December 3, at 7 a.m., and reached Rome at 5.45 p.m. (G.M.T.), the aerodrome being specially illuminated and a neat, easy landing being effected. They flew via Boulogne, Lyons and Turin, and encountered fog at Lyons and over the Alps, but from Turin to Rome the weather was clear. After refuelling man, woman, and machine, they set off again in the moonlight at 8.20 p.m. for Catania and Benghazi. About three hours later, when off the coast of Calabria, at Belmonte, they had to make a forced descent in the sea some one or two miles from the shore. The cause of this is not at present known over here, and while some reports lay the blame, as reports frequently do in these cases, to "engine failure," the de Havilland Co. inform us that, in reply to a message of sympathy, etc., they sent to Miss Spooner, the latter cabled: "Many thanks kind wire. Engine ran perfectly. Crash not due to engine failure." However, there they were sitting on the water all by themselves in the moonlight. They were unhurt, except for minor cuts, and the machine floated well. According to reports, they remained on their machine for some time trying to attract attention, but without success. Eventually, they saw a light on shore, and Miss Spooner very courageously plunged into the water and swam ashore for assistance. Two hours later she reached the shore in an exhausted condition and found some fishermen, who took her to the station of Belmonte where she received first aid. Meanwhile, rescue parties put out to help Flying Officer Edwards, who was eventually located on the still, fortunately, floating machine. He was brought ashore, the machine also being towed to the water's edge, apparently but little damaged. Here we must leave them recovering from their experience, in the good hands of our Italian friends, until further news of their future movements come to hand. It should be added in conclusion, however, that General Balbo, Italian Air Minister, in a telegram dated December 5, to Lord Amulree, Secretary of State for Air, giving details of the crash and of the action taken by the Italian authorities to rescue Flying Officer Edwards, states:—

"The two sufferers are enjoying cordial hospitality of Mayor of Belmonte and surrounded by every care. Aircraft is on beach awaiting dismantling. Acting on my instructions, an officer of the Royal Italian Air Force left Naples air station by air at dawn this morning to place himself at disposal of pilots for anything they may require. Assure you that they will be given every assistance as long as required by Royal Italian Air Force and local authorities."

Lord Amulree has sent the following reply to General Balbo:—

"Please accept my cordial thanks for the ready assistance which you have rendered to Miss Spooner and Flying Officer Edwards. Your action is yet another example of the happy relations subsisting between Italian and British aviation."

Another Capetown Flight

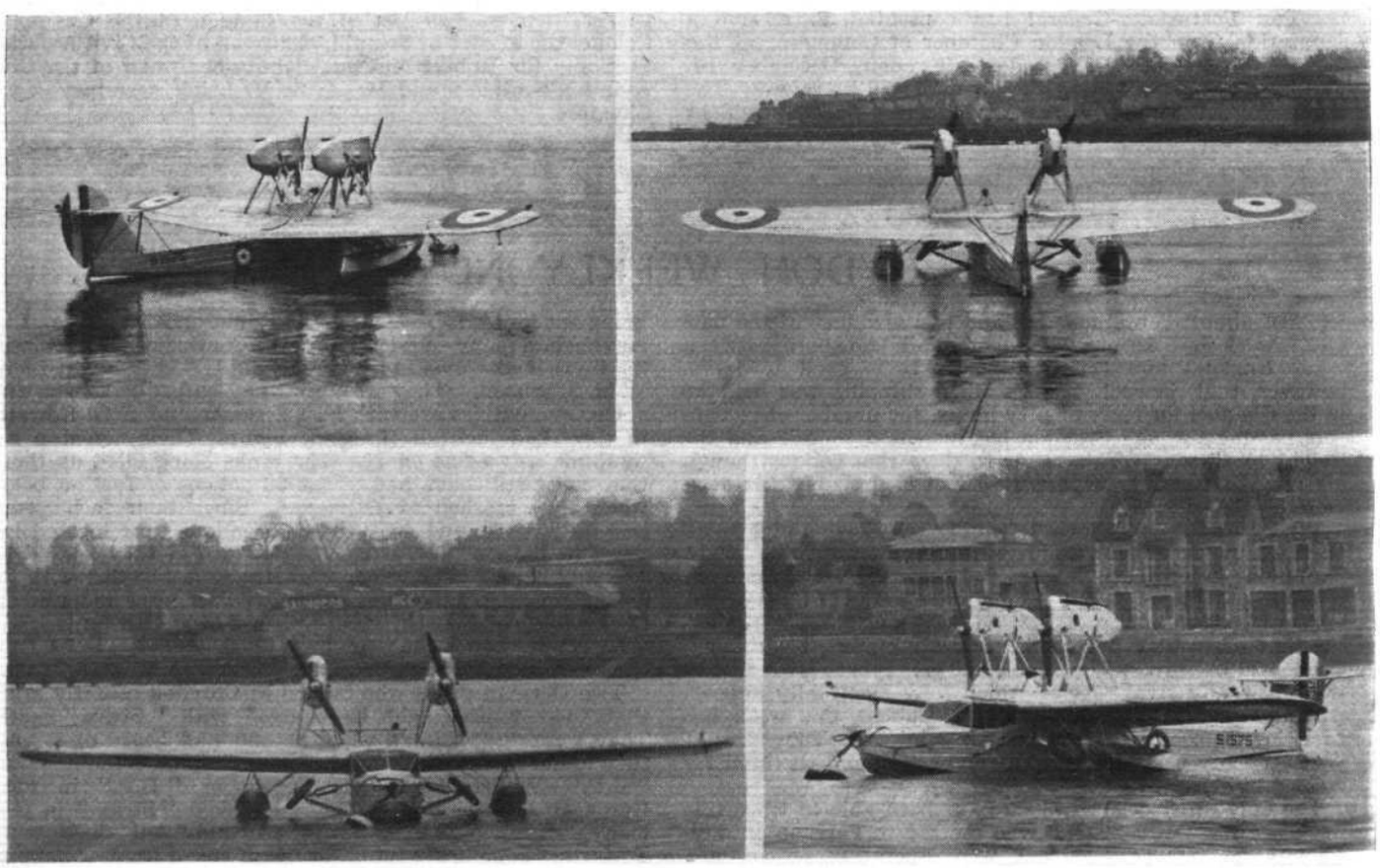
LT.-COMMDR. GLEN KIDSON is now organising an attempt on the record flight to the Cape and back, which journey he hopes to make in under 10 days. The machine used will be a Lockheed Vega of the latest type, which he is getting over here at the end of the year. This machine will have an exceptionally complete installation of instruments, and is credited with a cruising speed in the region of 150 m.p.h.

Lt. Mittelholtzer Off Again

LT. MITTELHOLTZER, the Swiss pilot who has already made several flights from Switzerland to Africa, left Zurich on December 2, on another expedition to Africa. This time he will fly over the Sahara to Bathurst, Gambia, where he will pick up Mr. Macomber, an American, and then visit the Lake Chad regions.

A Holland-Batavia Business Flight

MR. J. E. VAN TYEN, export manager of Van Houten's, the well-known cocoa manufacturers, has made what is believed to be the first solo flight on business, from Holland to Dutch East Indies. Setting out recently from Amsterdam, in his



A SERVICE AMPHIBIAN: Four views of the Saro "Cutty Sark" amphibian flying boat (two D.H. "Gipsy II" engines), which has been supplied to the Royal Air Force for specialised training in navigational instruction, as well as permitting additional experience of the amphibian flying boat. It is a standard "Cutty Sark," very fully equipped with instruments and electrical gear, and is arranged as a three-seater machine with full dual control.

Dutch Pander aeroplane, with British "Gipsy" aero engine, he completed 8,500 miles, flying to Batavia in 145 flying hours. The trip was made without untoward incident, and affords an able demonstration of the absolute reliability of this method of travel. Mr. van Tyen received an enthusiastic reception from a very large crowd on landing at Batavia, and later flew to Bandoeng, escorted by seven aeroplanes. It is understood that he will return to Batavia later for various official and Government receptions. On arrival at Batavia, Mr. van Tyen cabled the de Havilland Aircraft Company as follows: "Perfectly satisfied Gipsy engines. Spares unused. Only daily adjustments required."

Capt. Hawks at it Again

CAPT. FRANK HAWKS made a record flight from Washington to New York on December 9, covering 220 miles in 58 minutes, a speed of almost 228 miles an hour. The flight was made in a monoplane equipped with a supercharger.

Mrs. Miller's Transcontinental Record Broken

ON December 1, Miss Ruth Nichols broke the record for women for a transcontinental flight across the United States, recently established by Mrs. Keith Miller. Miss Nichols flew from New York to Burbank, California in an actual flying time of half a minute under 17 hrs.; Mrs. Miller's time was 25 hr. 44 min.

Doret's Record

IT is reported that the French pilot M. Marcel Doret, flying a Dewoitine single-seater fighter monoplane (500 h.p. Hispano Suiza) on November 30, broke the international speed record for a distance of 1,000 km. which he covered in 3 hr. 29 min. 37 sec., at an average speed of 286·227 k.p.h. (178·89 m.p.h.).

Capt. Costes for Air Union

CAPT. DIEUDONNE COSTES, the French airman, has been appointed Inspector-General of the Air Union system in Europ.

Italian Squadron's Atlantic Flight

IT is expected that the 12 Italian seaplanes, under Gen. Balbo, which is to attempt a formation flight from Rome to Brazil, will leave Orbetello on December 15.

Goulette and Lalouette Flying Home

M. PASQUIER, Governor-General of French Indo-China, who is flying to Paris with MM. Goulette and Lalouette, flew from Saïgon *via* Bangkok to Rangoon, on December 1. They reached Karachi on December 3, and Marseilles on December 6. Fog prevented them continuing on to Paris.

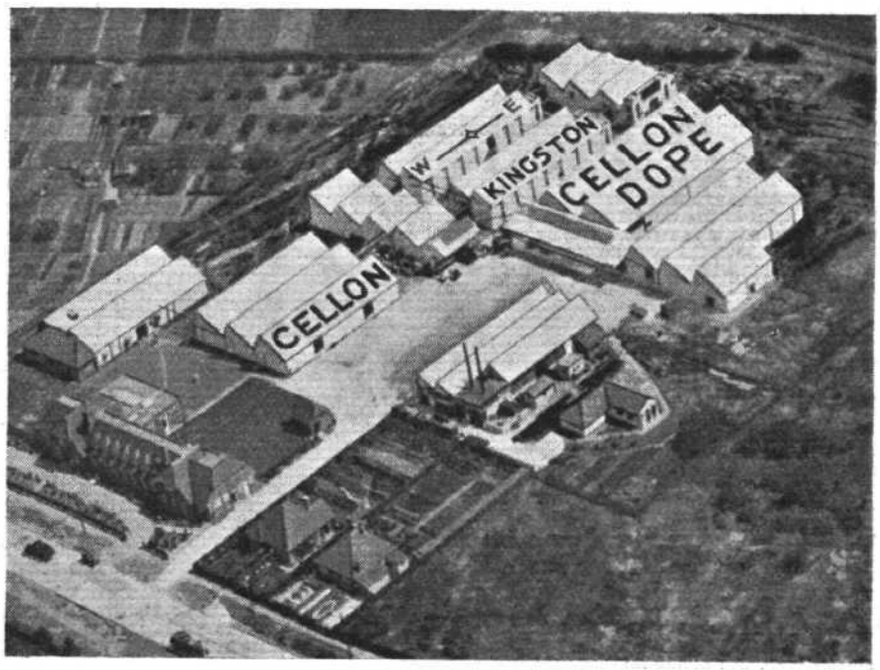
Fl. Lt. Hill Resumes

FT. LT. C. W. HILL, who came to grief in his "Gipsy Moth" near Atamboea on October 17, during the recent exciting "race" from England to Australia, having received spare parts for his machine (and the return of the collapsible boat he loaned to Kingsford-Smith), resumed his interrupted flight on December 9, when he flew from Sourabaya to Koepan, via Bima. The next day he arrived at Port Darwin.

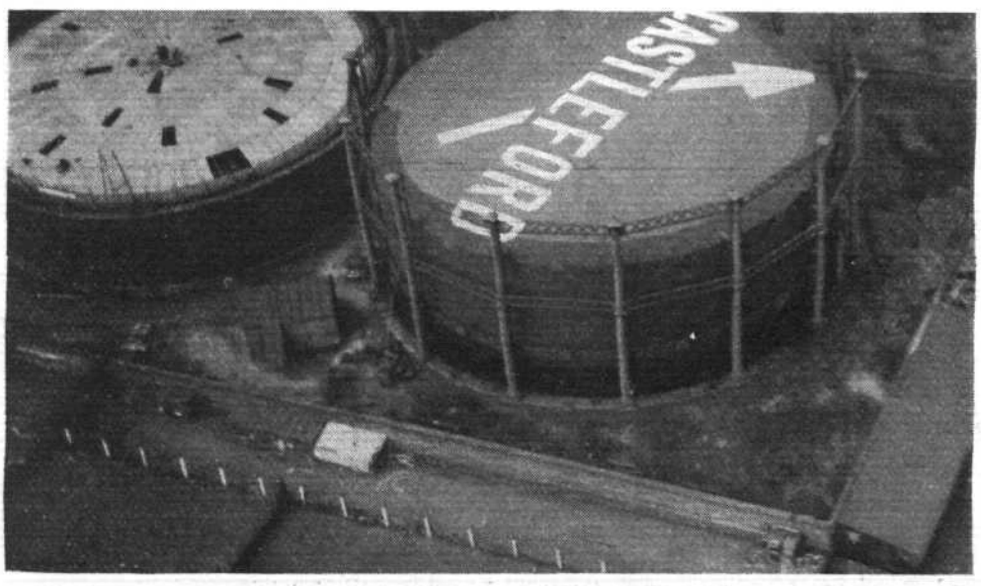
AERIAL SIGN POSTS

QUITE a large number of firms and authorities are now labelling their properties with a name, and in some cases direction arrows, in such a way that they can easily be seen from the air, and are therefore of great use to those flying about the country. This system has, of course been in use on many aerodromes for a considerable time, but even there is not as yet the general rule. Such firms as Cellon Ltd. have, as will be seen, provided a very useful sign post on the roof of their new dope factory near Kingston, while further north, we find that the directors of the Castleford Gas Co., which is near Sherburn-in-Elmet, have utilised the top of one of their gasometers for the same purpose. It has also been announced that the Anglo-American Oil Co. are painting letters and direction arrows on the roofs of their depots and tanks in all parts of the country. Several provincial towns have, in a similar manner, laid out the name of the town in chalk blocks, or some similar easily-read material on a site close by, and now we hear that Burgess Hill have their name laid out in such a manner close to the station. This sort of thing very greatly assists pilots when flying around the country, and although the signs are large and easily read from the air, none of them can be accused of disfiguring the countryside in any way, since those who are not actually flying will see nothing of them.

There is no doubt that in this country a great deal can be done on these lines to make the lot of flying men easier and it is to be hoped that at least one such name will soon be laid out for each town of reasonable size. It should not cost much to do and if manufacturers with large roofs combine with the local authorities in this matter the result can but make cross-country flying easier and more popular. We hope that more authorities will send in photographs of their efforts at aerial sign posting.



An aerial view of the Cellon Dope Works, near Kingston.
(Evening News Photo.)



The Castleford Co.'s gasometer, with its arrow pointing to Sherburn aerodrome.

R 101 INQUIRY

AS stated briefly in our last issue, the Inquiry into the loss of R 101 was re-opened on Wednesday, December 3, in the hall of the Institution of Civil Engineers. The Solicitor-General produced some further papers, among them a letter from Col. Richmond, dated October 24, 1929, which gave a table of excess weights in the metal work. There was a total excess of about 14½ tons over the calculations.

Mr. Gearish, shed manager at Cardington, said that when the ship was in as good a condition as could be expected, there was an average leakage of 22,588 c.f. of gas in 24 hours. The loss on R 100 was 80,000 c.f.

Professor Bairstow gave the result of his calculations on the effects of loss of gas. He said that the total deflation of any two adjacent gas bags in the forward part of the ship made it impossible in certain cases to maintain the horizontal trim of the ship, whatever was done with the ballast. The most extreme results were given by gas bags Nos. 4 and 5. At a speed of 55 knots, the deflation of any one gas bag from No. 3 to No. 8 would give a pitching moment greater than could be corrected by the elevator. He said that a gust or a lull would make it more difficult for the man in charge to apprehend what was happening, and that a lull might turn the scale towards disaster.

On Thursday, December 4, the Solicitor-General said it had since been calculated that R 100 before starting for Canada lost 45,000 c.f. of gas a day, not counting one bag which lost 22,000 c.f. a day. After the ship returned, not counting a bag which lost 21,000 c.f., the loss was 43,000 c.f.

Dr. Eckener's Evidence

Dr. Eckener then gave evidence. He had written it out in German (though he speaks good English), and it was interpreted.

The statement began as follows :—

"The extremely interesting and clear statements given yesterday by Professor Bairstow based on the experiments made in the wind tunnel clearly show that by assuming certain losses by gas it would be impossible to prevent an airship of the R 101 type from stranding in a trim and loaded condition, as was the case with the R 101 immediately prior to stranding, unless there be, for instance, sufficient time to retrim the ballast.

"Professor Bairstow, in my opinion, has dealt in a most convincing manner with all the factors determining the pitch movement. I particularly agree with him that the elevator is rendered ineffective when the ship comes into certain out-of-horizontal position, and also that heaviness of 13 to 15 tons is the maximum which can be carried dynamically. Yet I was somewhat surprised by the factor of pitching moment which he used for the effectiveness of the elevator. It is about double that which we calculate for the 'Graf Zeppelin.' For this ship the pitch moment is only about 2,000 ft.-tons in the event of the ship flying heavy in horizontal position; that is, this would apply only by assuming that it is at least 10 tons heavy."

Professor Bairstow, the statement continued, used a figure of more than 3,000 ft.-tons. The trim moment of the elevator alone in the "Graf Zeppelin" was only about 1,000 ft.-tons at an angle of 25 deg. up or down. He admitted that he did not know exactly the moment of the R 101, but were the figures of the two ships similar it would be impossible to keep the ship in a horizontal position if she had a loss of gas of about 1,200 ft.-tons pitching moment, assuming the total heaviness to be six or seven tons. This position would be brought much nearer if the speed of the ship, as no doubt it was, had been reduced to two-thirds by then, thus reducing the effectiveness of the elevator to only one-half. This would seem to be of value only from a theoretical point of view, but taking into account that the ship was heavy as a whole and nose heavy and could not keep, or could only temporarily be brought back to, a horizontal position, one had to imagine a process of straining in which the pitching moment might become effectively a question.

"In forming my opinion," the statement continued, "I commence with the fact that the ship made a sudden and very steep dive and that, in spite of the probable dropping of ballast, she could no longer be kept on a level keel, although she had been able up to that moment to hold her altitude. It lies very near at hand to connect sudden occurrence of head heaviness with the particularly steep dive, because the steep dive itself can hardly be explained by the sudden loss of gas, because the fact of a rent in one of the fore gas-bags would not show itself suddenly.

"The whole happening was no doubt as follows. At 2 o'clock the new watch came on to take over the control of the elevator. He (the coxswain) would have to feel his way into the static condition of the ship. This is an old experience. The weather was bumpy and the ship probably not only heavy—three or four tons—but a little heavy by the nose owing to the loss of gas in one of the forward gas-bags, in the same gas-bag which later sustained a large rent. It is very difficult at once to feel the head heaviness of the ship when the ship is heavy as a whole at the same time, because the static and dynamic factors would then compensate one another. It may now have happened that in a slight gust of wind the ship made a movement downwards which the new coxswain of the elevator did not immediately and correctly counteract because he could not be quite clear about the condition of the ship.

"The movement became steep because the ship now received a current of air from above on to her nose, thus accentuating the effect of the head heaviness. Gas between the gasbags and the outer cover escaped to the tail part of the ship, thus increasing the pitch movement still further. Owing to this unusually violent movement of the ship the already damaged gas-bag received a large rent from which the gas now quickly escaped, going into the tail. Thus it took some time (perhaps fully 30 seconds) to bring the ship back to a level keel."

Sir John Simon asked whether that would be done by putting up the elevator.

Dr. Eckener.—By putting up the elevator or by dropping fuel.

The interpreter continued the reading of the statement, in which Dr. Eckener said: "Probably—and on this point I agree with Professor Bairstow—this was possible only by dropping oil from the control car. This oil came to lie under the stranded ship owing to the fact that the vessel, through her reduced speed in the strong wind, was making very slight way over the ground, which I estimate at four to five miles an hour. The ship having righted herself through the throwing out of ballast was unable to maintain her horizontal position by reason of the fact that the gas continued to escape quickly."

Sir John Simon.—At the moment, as you reconstruct the position, do you consider that people in the control car would know that they would be going down?

Dr. Eckener.—Of course. Therefore they would stop the engines.

Replying to another question by Sir John Simon, Dr. Eckener said his reference to a pitching moment of 1,200 ft.-tons and a heaviness of six or seven tons applied to the "Graf Zeppelin," and he used it as an illustration. He thought the R 101 would be 3 to 3½ tons heavy because of rain and because of the loss of gas due to the ship going above pressure height at the start. He assumed that when the ship got back to horizontal by dropping ballast she lost speed, and also continued to lose gas. As a result the elevators could not do what they could have done before. The elevator moment, the pitching moment, was reduced to about half.

Sir John Simon.—Do I understand your view to be that those in charge of the ship, after putting up the elevators and getting the ship horizontal or perhaps even a little nose up, would at that moment begin to realise that they could not keep her horizontal?

Dr. Eckener.—Perhaps a little earlier. I realise that it must have been very difficult for the commander to decide to drop oil, because he needed it before he got to Egypt, and would try to save oil. It might happen that the ship was diving for 10 or 12 seconds, perhaps 15 seconds, not more. Of course, the commander would be hesitating to drop oil until this moment because he hoped that it would be possible to get the nose up by the elevators, and when he saw it was not possible to do so, then, in my opinion, he would drop oil.

Sir John Simon.—That would be a difficult decision for a most experienced man to make in a quarter of a minute?

Dr. Eckener.—I would have myself waited at least 12 or 15 seconds.

Hoping to be able to put yourself right?—Yes.

Putting yourself in his position, because he was a very fine and experienced navigator, if at the end of that time you realised that the elevators alone could not do it, you would drop oil?—Exactly.

In the meantime the ship would have lost speed?—In 10 seconds a diving ship loses about one-third of its speed.

If the captain came to the conclusion that the ship must go to the earth, what do you think he would do as regards the engines?—He could only stop the engines.

In order to reduce the severity of the blow?—Yes.

What do you think would be the cause of the fire?—A broken electrical wire.

Dr. Eckener added that during the war hydrogen-airships had more than once struck the ground without catching fire. He stated that the next airship to be built in Germany would use helium. He said that the "Graf Zeppelin" would not lose more than 7,000 to 8,000 cub. ft. of gas when in the shed.

Sqdn.-Ldr. Booth paid a high tribute to Flight-Lieut. Irwin and Lieut.-Commdr. Atherstone as airship officers. In general, he agreed with what Dr. Eckener had said. Quite independently he had arrived at the same general conclusion.

On Friday, December 5, various evidence was taken. Mr. T. S. D. Collins, head of the stressing department at Cardington, said that he did not think the disaster was caused by loss of gas. He could produce calculations to show that there was an ample margin of safety. He thought an unexplained dive might have occurred, such as he had once experienced in R 33. Capt. Meager, first officer of R 100, and Sqdn.-Ldr. Wann, late captain of R 38, both attributed the disaster to loss of gas. All the airship officers spoke of the shortness of the training the crew had had after a long period in which no airship was flying.

The Inquiry then terminated.

◈ ◈ ◈ ◈

R.A.F. Siam Flight

AIR MARSHAL SIR GEOFFREY SALMOND, Air Officer Commanding R.A.F., India, returned to Delhi by air from his visit to Bangkok and Singapore on November 21. Bad weather delayed him and his escort one day.

Britain and the Schneider Trophy

REPRESENTATIVES of the Air Ministry and the Royal Aero Club met on December 8 in order to discuss next year's Schneider Trophy contest, which is to be held in British waters. Challenges are expected from France and Italy, and, possibly, the United States. The conference decided to appoint a sub-committee to consider further the form which the national effort shall take. The sub-committee consists of Comdr. James Bird and Lt.-Col. W. A. Bristow, for the Royal Aero Club, and Air Commodore F. V. Holt, Director of Technical Developments, and Mr. B. E. Holloway, one of the principal assistant secretaries of the Air Ministry.

The Fairey in Belgium

FOLLOWING the order for 45 Fairey "Firefly" fighters from the Belgian Government, we understand that the Fairey Aviation Co., Ltd., gave a demonstration at Evere Aerodrome of the III F two-seater reconnaissance machine.

AIR MINISTRY NOTICES

AIR MINISTRY NOTICES TO AIRMEN

Bedford (Cardington) Flying of Kite Balloons

DURING the period of six months from December 1, 1930, kite balloons will be flown from Bedford (Cardington) airship station, up to an altitude of 15,000 ft. (4,572 metres).

Aircraft should therefore avoid flying within a distance of 4 miles of the airship station, except in cases of emergency.

Navigational Warning (*No.* 24 *of* 1930).

Croydon : Levelling Operations

1. LEVELLING work on the surface of Croydon aerodrome in the N.E. corner of the landing area will commence on Monday next, December 1, 1930.

2. Further details of the extent of this work will be published later.

3. Pilots are warned to avoid the area of work and, when landing in a S.W. direction, should alight well towards the centre of the landing area. When doing so, however, they should bear in mind that the present W. limit of the landing area is as defined by the boundary lights.

(*Navigational Warning No.* 25 *of* 1930).

Civil Air Maps of Great Britain

1. WITH reference to *The Air Pilot*, Volume 1, page 3, section 5, the following is a complete list of the civil air maps of Great Britain at present published :—

(i) The Ordnance Survey Ten Mile Map of Great Britain (Special Air Edition) in three sheets, price 5*s.* (paper flat) and 6*s.* (linen-backed folded) per sheet.

This map, printed in colours, is produced on a scale of one inch to ten statute miles (1 : 633,600). Topographical relief is shown by layers in brown, with contour lines. The positions of aerodromes, landing grounds, seaplane stations, airship stations, air navigation lights, prohibited areas and danger areas, are shown in red or blue.

The approximate areas covered by the sheets are :—

Sheet 1.—That portion of Scotland lying N. of Lat. 55°40′ N.

Sheet 2.—S. Scotland, N. England, Midlands, and N. Wales, between Lat. 56°30′N. and Lat. 52° 45′ N.

Sheet 3.—Wales, Midlands and S. England, S. of Lat. 53° 37′ N.

All three sheets are now on sale.

(ii) The ¼-in. Ordnance Survey Map of England and Wales (Civil Air Edition) in 12 sheets, price 2*s.* 6*d.* (paper flat) and 3*s.* 6*d.* (linen-back folded) per sheet.

This map, printed in colours, is produced on a scale of ¼-in. to one statute mile (1 : 253,440). Topographical relief is shown by layers in brown, with contour lines at 200 ft. vertical intervals. The position of aerodromes, landing grounds, seaplane stations, airship stations, air navigation lights, official air routes, prominent landmarks, ground signs, D/F stations, prohibited areas, danger areas, high W/T masts, &c., are shown in red.

All twelve sheets are now on sale.

(iii) The ¼-in. Ordnance Survey Map of Scotland (Civil Air Edition) in 10 sheets, price 2*s.* 6*d.* (paper flat) and 3*s.* 6*d.* (linen-back folded) per sheet.

This map is similar in character to the map of England and Wales described at (ii) above.

With the exception of sheet 1, which covers the Border district and is identical with sheet 1 of the England and Wales series, the ¼-in. map of Scotland is still in course of preparation and will be placed on sale as the sheets are completed.

2. Copies of the published maps may be obtained from FLIGHT office.

General Notice (*No.* 32 *of* 1930)

AIR MINISTRY NOTICE TO AIRCRAFT OWNERS AND GROUND ENGINEERS.

D.H. 80A. " Puss Moth " Aircraft : Cabin Roof Bracing.

1. ON certain aircraft of the above type, the part most likely to sustain damage in the event of a bad landing, especially on one wheel, is the forward attachment of the curved Vee bracing tubes in the cabin roof, where they are welded to the main front spar cross tubes. Cases of fracture at the weld have occurred.

2. These joints should, therefore, be frequently inspected for signs of cracks or complete fracture.

3. The Vee bracing tubes form a redundant structure and, even if both are severed from the front spar cross tube, the aircraft is safe to fly. Except in emergency, however, it should only be flown light for the purpose of proceeding to the nearest approved welding repair station.

4. The damaged joints should then be re-made in accordance with drawing No. M.1533 issued by The de Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware.

5. It is not considered essential to modify existing aircraft unless failure of the joints is detected. It is, however, desirable to incorporate the above modification when an aircraft is stripped for any other major repair.

6. This notice applies to the following aircraft of the type in question, unless Modification No. 242 has previously been incorporated :—Constructor's Nos. 2001, 2004, 2005, 2907 to 2043, 2045 to 2064, 2066 to 2095, 2097 to 2100, 2102, 2103, 2105 to 2107 and 2110.

(*No.* 45 *of* 1930.)

Changes in the Higher Commands. Royal Air Force

THE Air Ministry announces the following appointments :—Air Commodore Charles Stuart Burnett, C.B., C.B.E., D.S.O., now Chief Staff Officer, Iraq Command, to be Director of Operations and Intelligence, Air Ministry, and Deputy Chief of the Air Staff, with effect from January 31, 1931, vice Air Vice-Marshal Cyril Louis Norton Newall, C.B., C.M.G., C.B.E., A.M., on the latter assuming command of Wessex Bombing Area, Royal Air Force.

Air Commodore Wilfrid Rhodes Freeman, D.S.O., M.C., to Command Headquarters, Transjordan and Palestine, with effect from December 6, 1930, vice Air-Commodore Patrick Henry Lyon Playfair, M.C., on the latter completing his period of appointment.

Group-Captain Christopher Lloyd Courtney, C.B.E., D.S.O., now Deputy Director of Operations and Intelligence, Air Ministry, to be Chief Staff Officer, Iraq Command, with effect from January 7, 1931.

Foreign Officers with R.A.F. Units

THE Air Ministry announces :—Lieutenant Tsicaliotis, of the Greek Air Force, who has been attached to the School of Army Co-operation since September 1, 1930, completed his course on November 22, and will now proceed to the Central Flying School for a refresher course until December 23, and thence, after the Christmas Holidays, to No. 3 Flying Training School until January 16, 1931 (approximately).

Lieutenant Motzfeldt, of the Norwegian Air Corps, is to be attached to the Armament and Gunnery School from November 24 to 26 inclusive, in order to study the work and organisation of the school.

Lieut. Seyfettin Bey and Lieut. Esref Bey, of the Turkish Air Force, who have recently completed a course at No. 3 Flying Training School, have now been attached to R.A.F. Station, Tangmere, for the period November 25 to December 23, 1930, in order to study the organisation of and work carried out by fighter squadrons.

" Comrades of the Royal Air Forces "

WE have received the following from the Chairman, Air-Commodore C. R. Samson, of the above Association—brief reference to which has already been made in FLIGHT :—

" Without encroaching too much upon your valuable space, might I be allowed to briefly touch upon the aims and objects of this new post-war organisation. Primarily, the ' Comrades of the Royal Air Forces ' was brought into being after much considered discussion by my committee. Twelve years had been allowed to pass from the cessation of hostilities with no apparent effort having been made to hold together the officers and men who served in His Majesty's Air Forces.

" It must therefore be agreed that the time had arrived for the establishment of such a movement, as with each successive year the difficulty of making connection would become more pronounced. Our aim is to link together again those who served the Empire in any branch of the Crown Air Forces. To encourage and promote social gatherings amongst our members, and to render service to each other.

" The Association is free from any charitable motive ; in view of the fact that so many organisations of this type abound these days and it was not desired to add still one more to the list. Membership is strictly reserved to officers and men, past and present, of the Royal Naval Air Service, Royal Flying Corps, Royal Air Force, and the Dominion and Colonial Air Forces.

" The organisation will consist of headquarters, a central branch and provincial branches. These latter will be formed throughout Great Britain and the Dominions as and when application is received at headquarters. Branches are already opening in many of the main towns, and are meeting with strong support from the local residents.

" Annual subscription to the Association is a small sum, of which four-fifths is allocated for branch maintenance. There is no retinue of salaried officials to maintain from the funds and the control of the Association is vested in a strong representative Central Committee—most of whom served the country during the war, 1914-1918, in active aerial operations.

" Might I be allowed, through your columns, to bring this Association to the notice of all ex-officers and men and to appeal for their support to our undertakings. All correspondence should be addressed to the Secretary, ' Comrades of the Royal Air Forces,' The Queen's Hotel, Leicester Square, London, W.C.2, and not to the Air Ministry. (Signed) C. R. SAMSON, Air Commodore (Retd.), Chairman."

Flying Training Assessments

THE undermentioned officers and airmen have been awarded special assessments, " distinguished passes," in accordance with paragraph 377 of the King's Regulations and Air Council Instructions, on completing their course of *ab initio* flying training at No. 3 School, Grantham :—Pilot Officers E. Dawson, C. H. Williams, J. N. Baxter, M. Q. Candler, and V. A. Dawson ; Sergeants J. H. Craigie, R. G. Setchell, and R. H. Little. Notations have been made in their official records. Acting Sergeant J. H. Maddern has been awarded a " distinguished pass " on completing his course at No. 1 Flying Training School, Netheravon.

The Air Exercises

THE returns made by the Air Ministry concerning the Air Exercises which took place in August, and in which 250 R.A.F. machines were engaged, show an average of about 1,200 miles per machine, flown during the three days which the operations covered.

The flying hours were 2,980, of which 1,571½ were done by the Blue Colony forces, concerned chiefly with bombing attacks at long range, and 1,408½ by Red Colony, the defending force, consisting chiefly of fighters. The average hours flown by the squadrons of both forces were 120, the Red Colony figure being 108, and that of Blue Colony 131. Night bomber squadrons had an average of 130 hours ; day bomber squadrons (regular), 140 hours ; and day bomber squadrons (auxiliary), 145 ; while for fighters the average was 100 hours.

It is not the intention of the Air Ministry to prepare for publication a report on the Air Exercises.

The Esher Trophy

AIR CHIEF MARSHAL SIR JOHN SALMOND, Chief of the Air Staff, on Saturday, November 29, presented the Lord Esher Efficiency Trophy to No. 605, Warwickshire Bomber Squadron, Auxiliary Air Force, at Castle Bromwich, R.A.F. station, Birmingham. The trophy was received by Sqdn.-Ldr. J. A. C. Wright, who was also awarded the Territorial Decoration. Sqdn.-Ldr. Wright formed the squadron in 1925, and is still the commanding officer. The trophy, which was won for the second time by No. 605 Squadron, was first awarded four years ago.

The Royal Air Force Memorial Fund

THE usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House on November 13, 1930. Mr. W. S. Field was in the chair, and the other Member of the Committee present was Mrs. L. M. K. Pratt Barlow, O.B.E. The Committee considered in all 8 cases, and made grants to the amount of £220 10*s.*

Air Ministry Appointments

THE Air Ministry announces :—In consequence of the retirement of Sir Henry McAnally, C.B., the senior Principal Assistant Secretary of the Air Ministry, which is taking place on December 1, Mr. J. Stirling Ross, C.B., C.B.E., Director of Accounts, has been appointed a Principal Assistant Secretary, and Mr. J. M. Spaight, C.B.E., an Assistant Secretary has been appointed Director of Accounts.

MODELS

THE MODEL AIRCRAFT CLUB (T.M.A.C.)

Parliament Hill.—Sunday, November 30, was very unkind in the matter of weather, and although to many flying was a washout, Messrs. Mann, Debenham, Rutherford, Dods and Yeomans were able to get in some flights. Mr. Mann suffered considerably through the rain soaking his model, so that maintenance of flying trim was well-nigh impossible—but while flights were not of the customary duration, they were certainly very thrilling.

Subsequently, it was decided to move over to the north side of the hill and fly into the wind. Here the fun started, Mr. Debenham's CHD II roosting in trees, and only returning to earth after a prolonged struggle. After this, a more severe control was exercised, and a series of high-altitude flying from near the top of the hill towards the bandstand were successfully accomplished.

Mr. Rutherford had a very interesting Balsa Wood model glider of the Wien type, and in spite of the rain and the wind, managed to put up one or two good glides, which give great promise of better things when conditions are more favourable. The construction of this glider is very ingenious, and members of the Sail-Plane Club of T.M.A.C. will find many interesting features worthy of attention.

Mr. Dods put up a good wind fighting display with his heavyweight bus, but here again the weather conditions did their best to spoil sport.

Mr. R. A. Yeomans was in evidence with a green-wing monoplane (Low-Wing), which refused to be upset by the gusty wind, and although being very light, and on many occasions forced to fly backwards or tail-spin out of trouble, a remarkable degree of recovery and stability was displayed; the model always landing into the wind, and more often than not in the approved three-point manner.

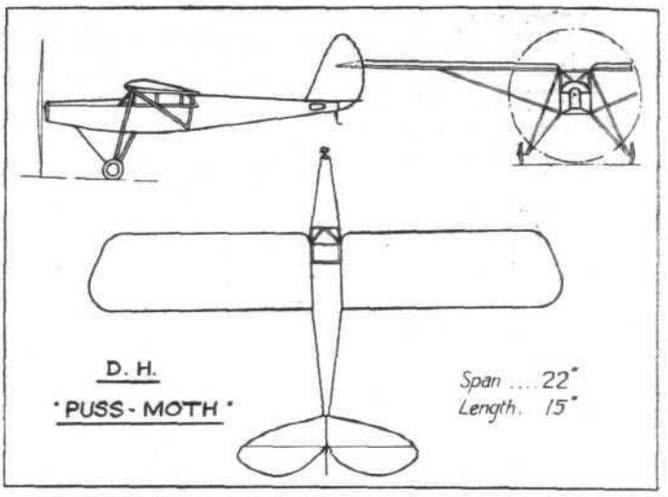
[Many members have asked for details of Mr. Debenham's CHD II "Puss Moth" model, and we are glad to be able to publish drawings and a few notes herewith.—ED.]

CHD II "Puss Moth."—Wing span, 22 in. Fuselage length, 13 in. Weight, 2 oz. Motive power, four strands ¼-in. elastic, 16 in. long. Owing to unfavourable weather, duration has not yet been determined, but up to the present it has flown every time until the elastic has finished unwinding, and the duration is approximately 20 sec.

The Manchester Squadron (*No.* 51), under the initial leadership of Mr. J. W. Kenworthy, is now showing progress, and flying is taking place at the old aerodrome, Alexandra Park, Withington, Manchester, adjoining Princess Road (on the site of last year's Royal Show). Will all aero-modellists in the Manchester district make a note of this, and also Mr. Kenworthy's address, which is:—New Barns Farm, Barlow Moor Road, West Didsbury, Manchester.

Coventry and Birmingham (*No.* 9 *Squadron*) are now progressing favourably, and when the weather permits, some good flying is to be expected in this district.

The inaugural meeting of the 4th Wing (Squadrons 10, 11, 12) will take place at Hackney Marshes on Sunday, December 14, under the supervision of Mr. M. R. Knight. Flying will commence at 11 a.m., and there will be Squadron, Wing and Visitors' competitions. All modellists, models and friends are invited, and we hope to have a very good display. To get to the ground, take a 35 or 38 'bus to Lea Bridge, and then walk along the path which runs between the two houses, "Prince of Wales" and "Ship Aground", which will lead you directly to the flying area.



Mr. Debenham's model "Puss Moth."

A Visit to Brooklands.—Sunday, December 7, was a delightful and ever-to-be remembered day in the history of the club.

At the personal invitation of Captain H. Duncan Davis, Managing Director of the Brooklands School of Flying, members of the 1st, 2nd, 4th, 6th, 10th, 12th and 15th Wings spent practically the whole of daylight on the aerodrome and club premises. A personally conducted tour of the workshops and hangars marked Captain Davis as one who will always be looked up to and relied upon for aerial information by many, and his unquenchable energy and enthusiasm surpassed even that of those members who left the ground for the first time; an event by the way which was, so I believe, Captain Davis' way of keeping things on the move when the rain seemed intent on ruining the show.

To the whole of the members of the B.S.F. (and the staff) we do tender our heartfelt thanks and appreciation of a glorious day, and to all it was an occasion of intense interest and kindred friendship.

The models were not able to give their best—the weather was absolutely dead against them, but in the competition for the wonderful prizes offered Mr. Pelly-Fry (S.M.A.E.) managed to hold his own against Mr. A. T. Willis (T.M.A.C.) by the very narrow margin of nine seconds, with Mr. Bullock (S.M.A.E.) only a trifle behind for third place.

Many new and interesting models were to be seen doing their best but undoubtedly the star performance of the day was cut short by the school hangars "getting in the way." Mr. Trevithick (T.M.A.C.) with a compressed air model made the only unassisted R.O.G. of the day and climbed in realistic manner towards the embankment—unfortunately, this being the initial test flight, Mr. Trevithick did not let her go all out with the result that she was not able to rise above the down currents in front of the sheds, and a perfect flight was brought to an abrupt conclusion by head on collision, with dire results to the motor.—Hon. Sec., A. E. Jones, 48, Narcissus Road, Hampstead.

◈ ◈ ◈ ◈

International Safety Conference

SENOR LA CIERVA, the inventor of the Autogiro, has been chosen as the president of the Spanish delegation attending the International Conference for the Furtherance of Safety in the Air, being held in Paris from December 10 to 23.

Klemm Hall Aeroplanes, Ltd.

KLEMM-HALL AEROPLANES, LTD., was registered as a public company on December 8, with an authorised capital of £50,000, for the purpose of building in this country the Klemm light monoplane. The British-built machine, which will be known as the "Klemm-Hall," will be equipped with Salmson and "Cirrus" engines as standard, other makes being fitted to order. While it is proposed to preserve all the main features of the original Klemm, the British model will have certain improvements, including folding wings, extra tankage (giving a range of over 1,000 miles), etc. The Directors of the new company are David George Hall, J.P., William T. Harvey, and Brig.-Gen. A. Huggins, C.M.G., D.S.O., M.I.M.E. The registered office is Ertia Trust, Ltd., 19, Adam Street, Adelphi, W.C.2, and Flying Headquarters, Heston Aerodrome.

The Desoutter Artificial Leg

IN our issue for Nov. 21 we stated in writing of Mr. Marcel Desoutter, that after his aeroplane crash in the early days of flying, he made for himself a very efficient artificial leg, and later established a large business, with his brother Charles, for the manufacture of artificial legs. Actually, this is not strictly correct, as it was Mr. Charles Desoutter who designed the leg, he being, so to speak, the engineering genius of the Desoutter family, and the technical leader of the firm of Desoutter Brothers.

THE ROYAL AIR FORCE

London Gazette, December 2, 1930.

General Duties Branch

Group-Captain E. D. M. Robertson, D.F.C., is appointed Director of Personal Services, Air Ministry (Nov. 10); Air-Commodore P. F. M. Fellowes, D.S.O., relinquishes his appointment as Director of Personal Services, Air Ministry (Sept. 5).

Flying Officer J. C. Larking (Auxiliary Air Force) is granted a short service commn. as Pilot Officer on probation, with effect from and with seny. of Nov. 17; Capt. S. H. Woolf (R.A.R.O.) is granted a short service commn. as a Flight-Lt. on the Supplementary List (Nov. 19); Lt. Anthony M. Kimmins, R.N., is re-attached to R.A.F. as a Flight-Lt. with effect from Nov. 22, and with seny. of July 18, 1927; Pilot Officer on probation E. Coleman, D.F.M., is confirmed in rank (June 17). The follg. Pilot Officers are promoted to rank of Flying Officer:—M. Watson (Oct. 13); G. F. Humphries (Nov. 1).

Flight-Lt. C. C. Edwards is placed on half-pay list, scale B, Oct. 15 to Nov. 25, inclusive. (Substituted for *Gazette* of Oct. 21). Flight-Lt. A. E. Thompson is placed on retired list (Dec. 2).

The follg. Flying Officers are transferred to the Reserve (Nov. 28):—*Class A.*—C. A. Anderson, L. G. Gray, J. G. Parkin, L. C. Phillips, R. O. O. Taylor. *Class C.*—T. B. Byrne, F. J. Parker, R. J. Stone (Lt. Norfolk Regt., T.A.).

Lt. K. Hunt, R.M., Flying Officer R.A.F., relinquishes his temp. commn. on returning permanently to duty with the Royal Marines (Oct. 28); Lt. O. C. Jones, R.M., Flying Officer, R.A.F., relinquishes his temp. commn. on discharge from the Royal Marines (Nov. 8).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

H. B. G. Michelmore is granted a commn. in Class A as Pilot Officer on probation (Nov. 18); Flying Officer F. W. Mundy is transferred from Class A to Class C (Oct. 4); S. H. G. Trower relinquishes his commn. on completion of service (April 1).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (BOMBER) SQUADRON.—The follg. to be Pilot Officer:—J. E. D. Benham (Oct. 27). Flying Officer J. C. Larking relinquishes his commn. on appointment to a short service commn. in the Royal Air Force (Nov. 17).

No. 602 (CITY OF GLASGOW) (BOMBER) SQUADRON.—Pilot Officer D. L. Lloyd is promoted to the rank of Flying Officer (Oct. 21).

No. 603 (CITY OF EDINBURGH) (BOMBER) SQUADRON.—Flying Officer E. S. V. Burton resigns his commn. (Nov. 17).

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

Sister Miss A. M. Hardwicke resigns her appointment (Dec. 1).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander J. O. Archer, C.B.E., to R.A.F. Depot, Uxbridge, on transfer to Home Estab.; 1.11.30.

Squadron Leader T. C. Luke, M.C., to No. 7 Sqdn., Worthy Down; 20.11.30.

Squadron Leader J. Leacroft, M.C., to Station Administration, Halton, 1.12.30.

Flight Lieutenants: E. C. Dearth, to R.A.F. Depot, Uxbridge; 17.11.30. G. G. Mobsby, to Royal Air Force College, Cranwell; 7.11.30. F. L. Hopps, A.F.C., to R.A.F. Base, Singapore; 22.11.30. F. W. W. Wilson, to No. 70 Sqdn., Hinaidi; 27.10.30. E. A. McKinley-Hay, to No. 11 Sqdn., India; 22.11.30. G. H. Loughnan, to No. 20 Sqdn., India; 22.11.30. L. M. Hilton, D.F.C., A.F.C., to No. 41 Sqdn., Ruislip; 17.11.30. S. A. Turner, M.B.E., to H.Q., Inland Area, Stanmore; 20.11.30. R. J. H. Holland, to No. 1 Flying Training School, Netheravon; 24.11.30. S. H. Woolf, to R.A.F. Depot, Uxbridge, on appointment to a Short-Service Commn; 19.11.30.

Flight Lieutenants: C. R. Smythe, to No. 405 (Fleet Fighter) Flight, Mediterranean, 29.11.20. C. C. Edwards, to No. 32 Sqdn., Kenley, 26.11.30. H. H. V. Tristem, to Station Administration, Halton, 1.12.30. S. H. Woolf, to H.Q., R.A.F., Transjordan and Palestine, 28.11.30.

Flying Officers D. J. R. Hylton, to Armament and Gunnery Sch., Eastchurch; 13.11.30.

Flying Officers: C. G. C. Woledge, to No. 10 Sqdn., Upper Heyford, 2.12.30. H. E. Sales, to No. 33 Sqdn., Bicester, 4.11.30. F. G. Fairhead, to Marine Aircraft Experimental Estab., Felixstowe, 24.11.30. A. McKee, to Aircraft Park, Lahore, 10.11.30. T. W. G. Eady, to No. 84 Sqdn., Shaibah, 26.10.30. de L. Cooke, to No. 27 Sqdn., Kohat, 7.11.30.

Pilot Officers: E. C. Smith-Ross, to No. 2 Armoured Car Co., Palestine; 3.11.30. E. G. B. Kiddle, to No. 3 Flying Training Sch., Grantham; 19.11.30. J. C. Larking, to No. 12 Sqdn., Andover, on appointment to a Short-Service Commn., as Pilot Officer (on probation); 17.11.30.

Pilot Officer E. F. J. L'Estrange, to No. 55 Sqdn., Hinaidi, 7.10.30.

Stores Branch

Wing Commander B. W. M. Williams, to Aircraft Depot, Iraq; 21.11.30, for Stores duties.

Flight Lieutenant R. T. Rich, to Station H.Q., Hornchurch; 1.12.30.

Flight Lieutenants: H. F. Webb, to H.Q., Inland Area, 7.11.30. G. G. C. Pigott, to R.A.F. Base, Singapore, 22.11.30.

Flying Officers: A. E. Connolly, to No. 216 Sqdn., Heliopolis; 3.11.30. G. Blinman, to No. 84 Sqdn., Iraq; 7.10.30.

Flying Officers: L. V. Hirst, to No. 207 Sqdn., Bircham Newton, 2.12.30 E. F. Smith, to Armament and Gunnery School, Eastchurch, 5.11.30.

Accountant Branch

Wing Commander P. J. Wiseman, to H.Q., R.A.F., Cranwell; 21.11.30.

Flight Lieutenant C. E. Aston, to R.A.F. Base, Calshot; 26.11.30.

Flying Officers: R. S. Sweet, to No. 502 Sqdn., Aldergrove, 1.12.30. R. Cassels, to H.Q., Iraq Command, 5.11.30.

Medical Branch

Wing Commander D.'A. Power, M.C., to H.Q., R.A.F., Mediterranean; 15.11.30.

Flight Lieutenants: W. E. Barnes, to R.A.F. Depot, Uxbridge; 1.12.30. J. Magner, to No. 1 (Indian Wing) Station, Kohat; 20.1.030.

Flying Officers: M. T. O'Reilly, to H.Q., Iraq Command; 21.11.30. H. T. Rylance, to Aeroplane and Armament Experimental Estab., Martlesham, on appointment to a temp. commn.; 19.11.30.

Flight Lieutenant R. F. MacLatchy, to Station H.Q., Boscombe Down, 4.11.30.

Dental Branch

Flight Lieutenant W. D. Guyler, to No. 10 Group H.Q., Lee-on-Solent; 18.11.30.

Chaplain's Branch

Revd. G. A. Davies, B.A., to No. 203 Sqdn., Basrah; 7.10.30.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

LIEUTENANTS: P. SKELTON, T. M. BROWNRIGG, W. F. HOLLINS, F. H. G. EVERED, J. M. RODGERS, and E. G. E. LIVERSIDGE, to *Montrose*; E. M. HUTTON, to *Victory*, for duty at R.A.F. base, Gosport; N. KENNEDY (Flying Officer, R.A.F.), to *Glorious*; December 1.

The following appointments were made by the Admiralty on December 8.

Lieuts. F/O. R.A.F.—F. W. N. Bassett, to *Courageous* (Dec. 6); and N. Kennedy, to *Glorious* (Jan. 1).

◈ ◈ ◈ ◈

Two Famous Squadron Leaders

THIS year will be remembered in the Fighting Area as the year of No. 43 (F.) Squadron, in so much as it was this unit which gave exhibitions of squadron aerobatics at the Hendon Display, at the Belgian centenary, and at Croydon, on the occasion of the visit of the Dominion representatives. When a squadron achieves excellence, one may be sure that it rejoices in a very good C.O., and No. 43 undoubtedly had an excellent one in Sqdn.-Ldr. C. N. Lowe, M.C., D.F.C., the famous old wing three-quarter of the England Rugby XV. Having commanded the squadron for three years, he has now been appointed Chief Flying Instructor at No. 2 Flying Training School, Digby. He is succeeded in the command of No. 43 (F.) Squadron by another famous pilot, Sqdn.-Ldr. L. H. Slatter, O.B.E., D.S.C., D.F.C., who was captain of the Schneider team of 1927, when the race was held at Venice and was won by Flight-Lieut. Webster. Sqdn.-Ldr. Slatter has recently commanded No. 111 (F.) Squadron, at Hornchurch, and worked it up to a high state of efficiency. We feel sure that he will be a worthy successor to Sqdn.-Ldr. Lowe. The command of No. 111 falls to Sqdn.-Ldr. E. R. Openshaw, who has recently been adjutant of No. 19 (F.) Squadron at Duxford.

No. 36 (Torpedo-Bomber) Squadron

No. 36 (Torpedo-Bomber) Squadron, which has lately been stationed at Donibristle, has been transferred to the R.A.F. Base at Singapore, and so comes under the Far East Command. Its place at Donibristle has been taken by No. 100 (B.) Squadron from Bicester. Both No. 36 and No. 100 are equipped with Hawker "Horsley" aeroplanes with Rolls-Royce engines. The Far East Command now boasts two squadrons. No. 205 (Flying Boat) Squadron, which made the famous tour from Plymouth to Australia and Hong Kong, in Southamptons, is already there, and now No. 36 is added to the strength at Singapore. The latter squadron travelled by sea to Karachi, and there the aeroplanes were assembled and the journey was continued by air. The first flight of four machines reached Allahabad on Thursday, December 4th.

Aeronautical Lectures at Royal United Service Ins.

AMONG the forthcoming lectures before the Royal United Service Institution, Whitehall, are the following relating to aeronautics. The lectures begin at 3 p.m.

February 11.—"The Future of Aeroplane Design for the Services," by Mr. C. R. Fairey.

February 25.—"The Land and Air Defence Forces of Australia," by Major-General J. H. Bruche; Mr. L. S. Amery, M.P., in the chair.

March 4.—"Meteorology and Air Navigation," by Lieutenant-Commander J. W. Josselyn; Rear-Admiral H. P. Douglas in the chair.

Miss Amy Johnson's Lecture for Children

MISS AMY JOHNSON will speak at the first of the Royal Empire Society's Christmas lectures for children at the Hotel Victoria on December 29, about her flight to Australia.

AIR POST STAMPS

By DOUGLAS ARMSTRONG

FOR collectors of air post stamps and letters the year 1930, now drawing to its close has been one of unusual interest and activity. Upwards of 350 new varieties of aero-stamps have made their appearance as the outcome of world-wide extension of the flying post services, whilst other additions to the air post collection include souvenirs of the epoch making voyages of the dirigible "Graf Zeppelin" and the Trans-Atlantic flight by the monoplane "Columbia." More exciting still, the values of practically all air post stamps and covers have soared to heights undreamt of by their fortunate owners. New high records have been established for the standard air-rarities and one fresh candidate at least entered for the rarities class in the unused "Columbia" air mail stamp of Newfoundland which is already nearing the £100 mark.

Two highly successful exhibitions devoted entirely to the air post cult were held during the year in London (in June) and in Paris (in November) both of which attracted considerable attention and were well supported by air post enthusiasts from all parts of the world. A large section of the great international philatelic exhibition that took place in Berlin last September was also given over to aero-philately when one of the highest awards, the Lady's Trophy, was conferred upon the important exhibits of Miss W. Penn Gaskell, one of the English exhibitors.

Several new publications of interest to aero-philatelists have been published, including a monumental bibliography of the subject by the erudite and indefatigable Dr. Robert Paganini of Zweisimmen (Switz.). Champion's excellent bilingual *Catalogue Historique et Descriptif des Timbres de la Poste Arienne* reached its sixth edition, whilst a concise catalogue, of government air post stamps only, appeared in England with the imprint of Stanley Gibbons, Ltd. Other useful catalogues and text books appeared both in America and Europe.

British Successes at Paris Show

Exhibitors from Great Britain carried off a number of the chief awards at the first international air post exhibition organised in connection with the Exposition Aeronautique de l'Art at the Pavilion de Marsan, Paris, from November 6 to 20 inclusive. Here were assembled the cream of the world's air post collections, the display being honoured by a visit from the French President. Once again the principal prize, a gold plaque with the felicitations of the jury, fell to Miss Penn Gaskell's notable entries, together with a special trophy presented by the Federation Philatelique Francaise. Mr. R. E. R. Dalwick's exhibits received a well-deserved silver-gilt medal and those of Mr. P. Oakey, one of silver. Messrs. Noble Burrows, F. H. Vallancey, M. Davis and Francis J. Field also gained awards of various grades.

Coming Empire Air Stamps

Air post collectors no less than regular users of the air mail services are beginning to despair of there ever being a British air post stamp, proposed extensions of the system notwithstanding. Meanwhile the overseas Dominions are proving less hide-bound in their efforts to popularise their local airways. Newfoundland is on the point of introducing special air stamps of a permanent type in denominations 15 c., 50 c., and $1 for use in her air mail service to be put in operation early in the coming year. The designs tentatively approved show in the case of the 15 cents stamp an aeroplane flying over a forest scene in winter, with figures of a postal courier and his dog team in the foreground. Alcock's Vickers-Vimy aeroplane taking off from St. John's upon the first successful Trans-Atlantic flight is to be the subject of the 50 c. vignette and a map indicating the routes followed by the principal Atlantic air flights made to or from Newfoundland that of the $1 value.

The New Zealand post office has in active preparation a special 3*d*. air mail stamp, details of which are lacking however, as we write. A supply of contemporary 4*d*. and 1*s*. air mail stamps of the Union of South Africa has been expressly overprinted for provisional use in connection with the service about to be inaugurated by the Junker concern in South-West Africa pending the arrival of two definitive air stamps now being prepared in England with a picture of an aeroplane flying over Windhoek, the capital of the territory. The Sudan Government proposes to provide a special stamp for aerial correspondence carried over the impending Cape-Cairo air line, and it is probable that this example may be followed by other countries on the route. Bahamas, Jamaica, British Guiana, Barbados and Trinidad are all reported to have the issue of air post stamps under consideration at the present time.

New Issues

Latest additions to the world's air post stamps include a picturesque series from *Albania* with portrait of King Zogu inset upon local views in denominations 5 qind to 3 franken; set of four values in modified colours from the *Dominican Republic*: 30 cents provisional surcharge upon the 40 c. air post stamp of the *Dutch Indies*: additional denominations in the *Hungarian* air stamp designs of 1927: permanent set of five finely engraved vignettes from *Honduras* depicting an aeroplane over the Presidential Palace. An emergency 10 centavos on 25 c. air stamp of *Cuba* to internal air post purposes.

Answers to Correspondents

A. C. (Bristol).—The most comprehensive air stamp catalogue is that published by Maison Th. Champion, of Paris, in English and French (price 7*s*. 6*d*.), but a more simplified volume dealing with government adhesive issues only has just been published by Stanley Gibbons, Ltd. (price 2*s*. 6*d*.) in English only. For a list of published works on air post collecting apply Book Department, Vallancey Press, Ltd., 15, St. Bride St., London, E.C.4. The Hon. Secretary, Aero-Philatelic Club, Mr. H. L. Hayman, 15 Upper Phillimore Gardens, W.8, will give you particulars of membership.

A Kingsford-Smith Stamp

The name of Air Commodore Kingsford-Smith is about to be added to the roll of distinguished aviators who have been honoured on stamps. A special air mail stamp is reported to be in preparation for early issue in Australia showing his famous aeroplane the "Southern Cross" surmounting the two hemispheres. Amongst those flyers to whom similar tribute has already been paid are Col. Lindbergh, Capt. Carranza, Mendez, Garay and Col. Franco.

PUBLICATIONS RECEIVED

Feldflieger. By Haupt Heydemarck. Dom-Berlag: Berlin, S.W.61. Price Rm. 6·50.

Pilot's "A" Licence. By John F. Leeming. 4th Edition. London: Sir Isaac Pitman and Sons, Ltd. Price 3*s*. 6*d*.

Gear Tooth Grinding. The Gear Grinding Co., Ltd., Handsworth, Birmingham.

Economic Conditions in Germany to July, 1930. *Department of Overseas Trade*. Report by J. W. T. Thelwall, M.C., and R. P. F. Edwards, D.S.O. H.M. Stationery Office, Kingsway, London, W.C.2. Price 4*s*. 6*d*. net.

AERONAUTICAL PATENT SPECIFICATIONS

(*Abbreviations*: Cyl. = cylinder; i.c. = internal combustion; m. = motors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1929

Published December 11, 1930

22,363. A. E. WHITE (BOEING AIRPLANE CO.). Aeroplane emergency flotation gears. (338,219.)

24,025. BOEING AIRPLANE CO. Oil-cooling systems for aircraft engines. (316,980.)

24,577. A. E. RUSSELL and BRISTOL AEROPLANE CO., LTD. Braking systems for the landing-wheels of aircraft. (338,139.)

33,765. SIR W. G. ARMSTRONG, WHITWORTH AIRCRAFT, LTD., and J. LLOYD. Monoplanes. (338,348.)

APPLIED FOR IN 1930

Published December 11, 1930

1,734. G. BOEHME. Model aeroplanes. (338,433.)

2,785. IMPERIAL AIRWAYS, LTD., H. L. HALL, and J. W. STIRLING. Magnetic navigation compasses. (338,441.)

2,775. S. G. COLINESE. Variable-thrust propeller for airships. (338,442.)

FLIGHT, *The Aircraft Engineer and Airships.*

36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: Holborn, 1884;
Holborn, 3211.

Telegraphic address: Truditur, Westcent, London.

SUBSCRIPTION RATES POST FREE

UNITED KINGDOM		UNITED STATES		OTHER COUNTRIES*	
	s. d.				*s. d.*
3 Months	8 3	3 Months	$2·20	3 Months	8 9
6 ,,	16 6	6 ,,	$4·40	6 ,,	17 6
12 ,,	33 0	12 ,,	$8·75	12 ,,	35 0

* *Foreign subscriptions must be remitted in British currency.*

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2, and crossed "Westminster Bank."

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.